AMERICAN JOURNAL OF PHARMACY.

JANUARY, 1852.

ON THE CORRESPONDENCE OF THE DEGREES OF BEAUMÉ'S HYDROMETERS WITH SPECIFIC GRAVITY.

By Henry Pemberton.

Read at the Pharmaceutical Meeting of the College held September 1st, 1851.

There is no instrument in such general use, and upon whose indications so much depends, that is liable to the variations and gross errors that affect so seriously Beaumés Hydrometers. It is well known that two hydrometers seldom mark like degrees, when plunged into the same liquid, and often vary so greatly that they become utterly useless. This faulty construction is generally attributed to the maker of them, and to some extent with justice, for many are so carelessly made that they will not float upright, or the stem evidently so unequal in diameter as to render it useless to seek for further cause. But it is not so generally known that the value of the degrees of the scale is equally uncertain, and though the hydrometer may be carefully made, there is no standard scale by which to obtain the value of any given degree. It is true that when Beaumé first invented his scale, he had relative values for each degree, but as the system of graduation for upwards of thirty years has been different from that upon which he constructed his instrument, they would be useless for comparison, if obtainable. This is to be regretted, more especially in the case of hydrometers for liquids denser than water, these being most

generally in use, and their scales subject to the greatest variations. Tables of comparison have been made by Delezannes, Francoeur, Bohnenberger, Gilpin, Dr. Ure, Nicholson, Vauquelin et Darcet, and others, but they are all formed from the original scale of Beaumé by calculation, or obtained from direct experiment by taking the sp. gr. of liquids in which the hydrometer sinks to various degrees.

No scale formed from experiments can be depended upon for accuracy, as a proof of which it is impossible to find two scales so formed agreeing, the error often affecting the first decimal place.

The basis upon which Beaumé formed his scale was very unfortunately chosen, and gave rise, at an early period, to changes that have completely modified even the theory of his instrument; he obtained the zero for his scale for light liquids, or pèse esprit, by immersion in water containing ten per cent. of salt in solution, and the point to which it sunk in pure water he made 10°, dividing the stem into like intervals he obtained the 20°, 30°, &c., the intermediate degrees by subdivision. The hydrometer for heavy liquids of pèse acide was differently adjusted. Water gave 0°, and the point to which it sunk in a solution containing fifteen per cent. of salt, he marked as 15°, the interval doubled gave the 30°, the next the 45°, and so on. Now it is evident that if an error is made in obtaining the first interval, it becomes multiplied in extending the scale, and even with the greatest care it would be impossible to obtain two instruments graduated precisely alike; the only reliable plan is to subdivide points obtained at the extremes of the scale, and this has been the practice with the makers since an early period.*

In an article by Francoeur entitled "Areomètre," and published in the Dictionnaire Technologe, at Paris, in 1822, the author says, in speaking of the method of graduation, "This kind of fault is so serious, that the workmen, knowing from the experiments of Guyton that concentrated sulphuric acid should mark 66 B., commonly

* Beaumé also pointed out another "Pèse Sel;" he made several saline solutions—each giving its own degree—5 parts of salt in 95 parts of water gave 5°, 10 parts of salt and 90 parts of water gave 10°, &c., (Dictionnaire Technologe.") This tended to increase the confusion, though it probably never came into general use, as the scale could not be extended beyond 25°.

make use of that liquid for determining the 66° of their standard, and, therefore, are safe in dividing the space between this level and that of water into 66 equal parts. Unfortunately, the author, instead of mentioning the corresponding sp. gr., contents himself with asking, "But was this proof acid well concentrated, and was Guyton's hydrometer properly constructed?" when he must have known that concentrated oil of vitriol has a density of at least 1.830, (which is so stated in an article in the same work only a few pages back,) while the tables he publishes further on give 1.7674 as = 66°, showing that at that time the same discrepancy existed between the pèse in general use, and the tables of comparison as at the present day.

The modern pèse esprit and pèse acide are entirely different instruments from those invented by Beaumé. The density of a solution containing 15 per cent. of salt is 1.1094, as determined by Francoeur and others, and which I have verified by experiment. Then as the bulk of the hydrometer immersed in liquid is inversely as the sp. gr. of the liquid, it follows that the portion of the hydrometer above water bears the same ratio to its total bulk, that the increase of sp. gr. of the liquid over water does to its real sp. gr. If then the interval on the stem is made equal to a certain number of degrees, the value of any other degree may be readily obtained by the equation $\frac{d\,q}{d-a}=H$ (for the total number of degrees contained in the volume of the hydrometer,) and $\frac{H}{H-q}$ for any given degree, or if the sp. gr. is known and the degree sought for $\frac{H}{d}=H-q$. In the above equations d = greatest sp. gr., a = least sp. gr., or zero, H = value of hydrometers in degrees, and q = the given degree. Making then, $\begin{matrix}a=1000\\d=1.1094\\q=15\end{matrix}$ the equation gives $\frac{1.1094\times15}{1.1094-1.000}=152°=H$ and $\frac{152}{152-q}$ as the formula for Beaumé's original pèse acide.

Professor R. O. M'Culloch in his admirable "Report on Hydrometers," has given tables by Francoeur calculated from the above formula, but which are useless for reference, as the degrees do not correspond with those given by any of the modern hydrometers; for example, making 66° = sp. gr. 1.767, instead of 1.83, which is the sp. gr. of commercial oil of vitriol, requiring 69½° to equal sp. gr, 1.83. As the scale upon which 66° = 1.83 has been for many years in such general use, it would be impossi-

ble to supplant it with one giving different though more correct values; the only thing that can be done is to remove the cause of its errors, and to place it upon a true and scientific basis, by which correct tables may be formed for the value of its degrees, and which, by being recognised as a standard by competent authority, will enable the maker to give it a degree of accuracy now unobtainable.

Beaumé's hydrometer, whether made in England, France, Germany, or this country, have always the 66° equal in strength to commercial sulphuric acid. Nearly all of them are marked with an arrow or other device to show that that is considered the level to which it should sink in the acid; as the maker has no authority by which to decide the proper strength of the acid, it compels him to take for granted that it is of uniform strength, which by no means is the case. Most systematic chemical works unite in stating that it is about 1.843 or 1.845, a degree of concentration rarely met with. The mean of several trials of samples, obtained from full carboys made by three different houses in this city, give a result of 1.8366.

The table published in Wood & Bache's Dispensatory, and which is nearer correct than any other I have met with, gives 66° = 1.8312, taking 1.8354 as the standard sp. gr. for 66° (the advantage of which is that it gives a number without fractions for a modulus,) we have the formula $\frac{145}{145-q}$ for the hydrometer, giving 1.0740 as the sp. gr. for 10°. As 1.0740 differs from 1.0735 (the density given by Beaumé's 10 per cent. solution,) only by $\frac{5}{10,000}$ it is evident the manner in which the present scale has come into use. The makers noticing that 10 per cent. salt gave 10°, and 15 per cent. 15°, erroneously thought that 10° of one scale was equal to the 10° of the other, and to save the trouble of preparing two solutions, substituted the 10 per cent. for the 15 per cent. This probably was the case before the density of commercial acid was established at its present strength, and, therefore, would not attract attention by the error.

If, then, 1.0740 is recognised as the standard sp. gr. for 10° B., 1.8354 will be the sp. gr. corresponding to 66°, and if the instrument maker takes proper care in ascertaining that his acid is of

the above sp. gr., each degree can be obtained by dividing the space, and their value determined by the equation $\frac{145}{145-q}$, enabling any one to prove the correctness of a hydrometer, and furnishing tables that cannot differ or contain any source of error.

The pèse esprit has suffered even greater changes. It is much to be regretted that the same modulus cannot be used for both instruments, but it would produce so great a change if attempted, that the confusion arising from it would more than counterbalance its advantages. Beaumé's 10 per cent. salt solution was used by him for the zero, (sp. gr. 1.0735,) and water for the tenth degree (sp. gr. 1.000,) of the scale. The formula $\frac{d \times q-10}{d-a} = H$, gives 146 as the modulus for his hydrometer. The table formed from this (the true Beaumé's pèse esprit,) differs entirely from the one now in use; a comparison of several scales further on will show the change.

The scale most frequently met with approaches the one formed from the modulus 140, and is the one given in Wood & Bache's Dispensatory, and from being so generally in use, is often considered the standard; its modulus, however, is irregular and therefore erroneous. A curious fact connected with this scale, and which has probably led to its adoption, is the close correspondence with its values and those of Cartier's scale, as obtained by making 22° of Cartier's equal 22° of Beaume's original 146 modulus scale, and subdividing every 15° Beaumé into 16, (Cartier's plan.) Many of the higher numbers of the scale correspond exactly with the modern scale, (modulus 140) and all of them are within half a degree of being identical. It is, therefore, useless to publish tables for reducing Cartier to Beaumé, the so-called Beaumé's scale being in reality as near the original Cartier scale, as the different instruments made by Cartier himself were to each other. It is surprising that the above coincidence has escaped notice so long. Liebig and Poggendorf's "Handwoörterbuch der Chemie," contains tables placed near each other which almost coincide, and yet no notice is taken of it and the rule given to reduce the scales, when the reduction would only remove them two or three degrees apart.

To recapitulate, the position of the pèse esprit at present is as follows. Beaumé constructed a scale upon the modulus 146.

Cartier supplanted him with a poor instrument of his own, formed experimentally, and with no definite modulus, but approaching nearest to the scale given by the modulus 140. In course of time Cartier's scale became confounded with Beaumé's, the title "Beaumé's" being applied to an extension of Cartier's, (it extending originally only to 44°,) and the real Beaumé's scale entirely lost sight of. The formula for converting Beaumé's degrees into Cartier's is still published with all the tables, though worse than useless. The instruments made in France are generally marked "selon Cartier," and are so in reality, but differ in no respect from the common instrument known as Beaumé's hydrometer.

To remove the difficulty and confusion attending their use, and to restore to both their real value, it is only necessary for some competent authority to determine a modulus for each scale, which should be, from the reasons already given, 145 for the pèse acide, and 140 for the pese esprit, (taking the 10 per cent. solution for zero.) The value so given for the 66th degree of the former scale, and the 60th of the latter, would determine the sp. gr. for the extremes of the scale, and each degree between obtained by division. Ether of sp. gr. .7368, temp. 60 F., is easily obtainable, and would furnish the 60th degree of the pese esprit, the higher degrees on each scale could then be readily laid off in the usual manner. If the united colleges in this country would adopt this system, (or any other if better,) Beaumé's hydrometer would become as valuable for its accuracy in determining specific gravities, as it is for its convenience; as any desired delicacy could be given to its indications, to the one-tenth of a degree if desirable.*

[* The Philadelphia College of Pharmacy, deeply impressed with the real importance and usefulness of reliable hydrometers to the pharmaceutist and the manufacturer, have under consideration the propriety and feasibility of having a supply of these instruments carefully made, according to the data furnished by Mr. Pemberton, under the supervision of a competent committee, who will only give the authority of the College to such of the hydrometers as shall pass their inspection, after trial.—EDITOR.]

Table for Liquids lighter than Water.

	Modulus 140, 60° F.	Wood & Bache Disp'y.	Francoeur	Delezennes	Turner. 55 F.	Cartier by Fran'r.	Cartier by Delez'e.
10	1.0000	1.0000	1.0000	1.0000	1.000		
11	0.9929	0.9930	0.9932	0.9929	0.990		1.0000
12	0.9859	0.9861	0.9865	0.9859	0.985		0.9922
13	0.9790	0.9792	0.9799	0.9790	0.977		0.9846
14	0.9722	0.9724	0.9733	0.9722	0.970	0.9764	0.9771
15	0.9655	0.9657	0.9669	0.9655	0.963	0.9695	0.9697
16	0.9589	0.9591	0.9605	0.9589	0.955	0.9627	0.9624
17	0.9523	0.9526	0.9542	0.9524	0.949	0.9560	0.9552
18	0.9459	0.9462	0.9480	0.9460	0.942	0.9493	0.9481
19	0.9395	0.9399	0.9420	0.9396	0.935	0.9427	0.9412
20	0.9333	0.9336	0.9359	0.9333	0.928	0.9363	0.9343
21	0.9271	0.9274	0.9300	0.9272	0.922	0.9299	0.9275
22	0.9210	0.9212	0.9241	0.9211	0.915	0.9237	0.9208
23	0.9150	0.9151	0.9183	0.9151	0.909	0.9175	0.9143
24	0.9090	0.9091	0.9125	0.9091	0.903	0.9114	0.9078
25	0.9032	0.9032	0.9068	0.9033	0.897	0.9051	0.9014
26	0.8980	0.8974	0 9012	0.8975	0.892	0.8994	0.8951
27	0.8917	0.8917	0.8957	0.8918	0.886	0.8935	0.8889
28	0.8860	0.8860	0.8902	0.8861	0.880	0.8877	0.8827
29	0.8805	0.8804	0.8848	0.8806	0.874	0.8820	0.8767
30	0.8750	0.8748	0.8795	0.8751	0.867	0.8763	0.8707
31	0.8695	0.8693	0.8742	0.8696	0.861	0.8707	0.8649
32	0.8641	0.8638	0 8690	0.8643	0.856	0.8652	0.8590
33	0.8588	0.8584	0.8639	0.8590	0.852	0.8598	0.8533
34	0.8536	0.8531	0.8588	0.8537	0.847	0.8545	0 8477
35	0.8 84	0.8479	0.8538	0.8486	0.842	0.8491	0.8421
36	0.8433	0.8428	0.8488	0.8435	0.837	0 8439	0.8366
37	0.8383	0.8378	0.8439	0 8384	0.832	0.8387	0.8312
38	0.8333	0.8329	0.8391	0.8334	0.827	0.8336	0.8258
39	0.8284	0 8281	0.8343	0.8285	0.822	0.8286	0.8205
40	0.8235	0.8233	0.8295	0.8236	0.817		0.8153
41	0.8187	0.8186	0.8249	0.8188			0.8101
42	0.8133	0.8139	0 8202	0.8141			0.8050
43	0.8092	0.8093	0.8156	0.8094			0.8000
44	0.8045	0 8017	0.8111	0.8017			
45	0.8000	0.8001	0 8066	0.8001			
46	0.7954	0.7956	0.8022	0.7956			
47	0.7909	0.7911	0.7978	0.7911			
48	0.7865	0.7866	0.7935	0.7866			
49	0.7821	0.7821	0.7892	0.7823			
50	0.7777	0.7777	0.7849	0.7779			
51	0.7734	0.7733	0.7807				
52	0.7692	0.7689	0.7766				
53	0.7650	0.7646	0.7725				
54	0.7608	0.7603	0.7684				
55	0.7567	0.7560	0.7643				
56	0.7526	0.7518	0.7604				
57	0.7486	0.7476	0.7565				
58	0.7446	0.7435	0.7526				
59	0.7407	0.7394	0.7487				
60	0.7368	0.7354	0.7449				
61	0.7329	0.7314					
62	0.7290	0.7251					
63	0.7253						
64	0.7216						
65	0.7179						
66	0.7142						
67	0.7106						
68	0.7070						
69	0.7035						
70	0.7000						

The formula $\frac{a \times q - 10}{d - a} = H$ gives the modulus for any scale when the degree and sp. gr. are known. And $\frac{H}{H - 10 + q}$ gives the specific gravity.

Carter's scale by Francoeur, is from the original Beaumé, by the formula $15C = 16B \pm 22$, and Delezenne's by the same formula, from the modified instrument now in use.

Turner's authority is not given, but the scale coincides with Gilpin's; it is utterly worthless, the modulus varying from 128 to 134; it was made by experiment.

Table for Liquids denser than Water.

	Modulus 145. 60° F.	Wood's Bache Disp'y.	Franc'r mod. 152.	Delezennes.	Bohnenberge	Gilpin
1	1.0069	1.0070	1 0066	1.0072	1.077	
2	1.0139	1.0141	1.0133	1.0145	1.013	
3	1.0211	1.0213	1.0201	1.0219	1.020	1.020
4	1.0283	1.0286	1.0270	1.0294	1.027	
5	1.0357	1.0360	1.0340	1.0370	1.033	
6	1.0431	1.0435	1.0411	1.0448	1.040	1.040
7	1.0507	1.0511	1.0483	1.0526	1.047	
8	1.0583	1.0588	1.0556	1.0606	1.055	
9	1.0661	1.0666	1.0630	1.0687	1.062	1.064
10	1.0740	1.0745	1.0704	1.0769	1.069	
11	1.0820	1.0825	1.0780	1.0853	1.077	
12	1.0902	1.0906	1.0857	1.0937	1.084	1.089
13	1.0984	1.0988	1.0935	1.1023	1.092	
14	1.1068	1.1071	1.1014	1.1111	1.099	
15	1.1153	1.1155	1.1095	1.1200	1.107	1.114
16	1.1240	1.1240	1.1176	1.1290	1.115	
17	1.1328	1.1326	1.1259	1.1382	1.123	
18	1.1417	1 1414	1.1343	1.1475	1.132	1.140
19	1.1507	1.1504	1.1428	1.1570	1.140	
20	1.1600	1.1596	1.1515	1.1666	1.148	
21	1.1693	1.1690	1.1603	1.1764	1.157	1.170
22	1.1788	1.1785	1.1692	1.1864	1.166	
23	1.1885	1.1882	1.1783	1.1965	1.174	
24	1.1983	1.1981	1.1875	1.2068	1.183	1.200
25	1.2083	1.2082	1.1968	1.2173	1.192	
26	1.2184	1.2184	1.2063	1.2280	1.201	
27	1.2288	1.2288	1.2160	1.2389	1.211	1.230
28	1.2393	1.2394	1.2258	1.2499	1.220	
29	1.2500	1.2502	1.2358	1.2612	1.230	
30	1.2608	1.2612	1.2459	1.2727	1.239	1.261
31	1.2719	1.2724	1.2562	1.2844	1.249	
32	1.2831	1.2838	1.2667	1.2962	1.260	
33	1.2946	1.2954	1.2773	1.3083	1.270	1.295
34	1.3063	1.3072	1.2881	1.3207	1.281	
35	1.3181	1.3190	1.2992	1.3333	1.291	
36	1.3302	1.3311	1.3103	1.3461	1.302	1.333
37	1.3425	1.3434	1.3217	1.3592	1.313	
38	1.3551	1.3559	1.3333	1.3725	1.325	
39	1.3679	1.3686	1.3451	1.3861	1.336	1.373
40	1.3809	1.3815	1.3571	1.3999	1.347	
41	1.3942	1.3947	1.3694	1.4141	1.359	
42	1.4077	1.4082	1.3818	1.4285	1.371	1.414
43	1.4215	1.4219	1.3945	1.4433	1.384	
44	1.4356	1.4359	1.4074	1.4583	1.396	
45	1.4500	1.4501	1.4206	1.4735	1.408	1.455
46	1.4616	1.4645	1.4339	1.4893		
47	1.4795	1.4792	1.4476	1.5053		
48	1.4949	1.4942	1.4615	1.5217		1.500
49	1.5101	1.5096	1.4758	1.5384		
50	1.5263	1.5253	1.4902	1.5555		
51	1.5425	1.5413	1.4951	1.5730		1.547
52	1.5591	1.5576	1.5200	1.5909		
53	1.5760	1.5742	1.5353	1.6092		
54	1.5934	1.5912	1.5370	1.6279		1.594
55	1.6111	1.6086	1.5671	1.6471		
56	1.6292	1.6264	1.5833	1.6667		
57	1.6477	1.6446	1.6000	1.6868		1.659
58	1.6666	1.6632	1.6170	1.7074		

Delezenne's table is from the modulus 140.

Bohnenberger's table is very irregular, having been formed from experiment, the modulus of various parts of the scale differing very much. Gilpin's table is in the same condition. The modulus corresponding to several degrees of each are given as instances.

Bohnenberger.		Gilpin.	
D.	M.	D.	M.
10°	154.3	9°	149.5
15°	156.1	15°	146.5
18°	146.7	27°	144.3
20°	155.1	36°	141
30°	155.2	48°	144
40°	155.28	66°	143.8

	Modulus 145 60° F.	Wood & Bache Disp'y.	Franc'r mod. 152.	Delezennes	Bohneuberger	Gilpin
59	1.6860	1.6823	1.6344	1.7285		
60	1.7058	1.7019	1.6522	1.7501		1.717
61	1·7261	1.7220	1.6705	1.7722		
62	1.7469	1.7427	1.6889	1.7950		
63	1.7682	1.7640	1.7079	1.8184		1.779
64	1.7777	1.7858	1.7273	1.8423		
65	1.8125	1.8082	1.7471	1.8669		
66	1.8354	1.8312	1.7674	1.8922		1.848
67	1.8589	1.8548	1.7882	1.9180		
68	1.8831	1.8790	1.8095	1.9447		
69	1.9079	1.9038	1.8313	1.9721		1.920
70	1.9333	1.9291	1.8537	2.0003		

REMARKS ON THE PREPARATION OF SOME OF THE SALTS OF MANGANESE.

By W. W. D. Livermore.

Manganese as a remedial agent has repeatedly attracted the attention of physicians, but for reasons not clearly stated has as often fallen into disrepute.

Lately, however, it has been again revived, and brought more prominently into notice by M. Hannon.* This gentleman recommends several forms in which it may be prescribed with advantage particularly the sulphate, carbonate, tartrate, phosphate, and iodide; and as this metal enters into the human organism, we have reason to suppose that, like iron, some one or other of its combinations might frequently be used with success in the treatment of disease.

The manganese preparations possess advantages over those of iron, in being free from astringency, and compatible with astringent vegetable infusions and extracts, and consequently, affording the practitioner facilities for exhibiting it in conjunction with other substances, and by these means enlarging its sphere of usefulness.

The salts of manganese though numerous, may all be obtained either directly or indirectly from the sulphate, and therefore it becomes a desirable object to discover the best and most expeditious process by which this salt may be obtained.

* See vol. xxii, Page 297 of this Journal.

Mr. Phillips, (Journal of Pharmacy, vol. xii, p. 57,) recommends suspending deutoxide of manganese in water, and then to pass through it a stream of of sulphurous acid gas; thus reducing the deutoxide to protoxide, and converting the sulphurous acid, into sulphuric and hyposulphuric acids: which, uniting with the manganese, and forming soluble salts, are dissolved by the water. Prepared in this way the sulphate is contaminated with a certain amount of hyposulphate, this difficulty is obviated by boiling the solution for some time, previous to evaporation.

Another method, however, I have found to succeed better. It is to mix in a sand crucible, the black or deutoxide of manganese, with sulphuric acid, until of a thick pasty consistence; cover with a smaller crucible, and expose the mixture to a red heat for half an hour. At the end of this interval, remove the crucible from the fire, and when cool, reduce the dark brown mass to a coarse powder. Introduce this powder into another crucible, and saturate as before with sulphuric acid. Again apply heat and continue it until white vapors cease to be expelled. By these means we obtain a heavy compact mass, of a light gray color, intermixed with red; possessing at first a pungent, but immediately followed by a sweetish, slightly astringent taste; and soluble to a great extent in water. The next step of the process is to reduce this impure sulphate to a *fine* powder, and to dissolve the soluble matter, with successive portions of water. The solution should be filtered into a porcelain capsule, and placed over a sand bath to heat. When nearly boiling, drop into it carbonate of manganese in small portions at a time, until all the iron shall have been precipitated, and the liquid from having been of a dark red, assumes a pale rose tint. Filter and evaporate to the consistence of thin syrup, and set aside to crystallize by spontaneous evaporation. It requires from one to two weeks to accomplish nicely.

When the object is to make other preparations than the sulphate, it saves both time and trouble to proceed a little differently from this. Thus, instead of filtering the solution of the substance left after the second incineration, (a process extremely tedious) it is better to *heat* it at once, and to add bi-carbonate of soda in successive portions of an ounce or two at a time, stirring the mixture, until the iron is wholly precipitated, and a small part of the liquid, on being removed and filtered, appears of the appro-

priate rose color. Remove from the fire, and pour the contents of the vessel into a linen strainer stretched over a frame, returning the solution as it passes through until perfectly transparent and free from sediment.

Bi-carbonate of soda added to this purified solution, throws down a copious precipitate of carbonate of manganese. For use it must be well washed with hot water, collected and suspended to drain for twenty-four hours, and dried over a water or sand bath; if the latter, care must be taken not to have the temperature too high; it should not exceed that of boiling water, else the product will be dark.

The carbonate when properly prepared is in the form of a heavy white powder, insoluble in water but dissolving readily in sulphuric acid.

The syrup of the iodide of manganese may be conveniently prepared by dissolving 330 grains iodide of potassium, and 264 grains tartaric acid, each separately in one and a half fluid ounces of water. Mix the solutions, and filter and saturate the resulting hydriodic acid with the carbonate of manganese; again filter, and add sufficient simple syrup to make the whole measure f.℥vi. This syrup contains fifty grains of solid iodide in each fluid ounce; is permanent in composition, and compatible with vegetable infusions and syrups, these properties giving it much advantage over the corresponding preparations of iron.

The equivalent of iodide of manganese, assuming it to be an anhydrous salt, is 154. Consequently each ounce of the syrup contains 40½ grains of iodine and 9½ of manganese.

Carbonate of manganese digested in a concentrated solution of tartaric acid, is decomposed, and a tartrate is the result. This should be well washed to free it from any excess of acid, and dried with a gentle heat. It should be perfectly white, insoluble in water, but soluble without residue in concentrated muriatic acid.

Phosphate of manganese is most readily prepared by adding to a solution of the sulphate of manganese, one of alkaline phosphate of soda. A solution of phosphate of soda suitable for this purpose is cheaply prepared by digesting 5lbs. bone black, with 3lbs. sulphuric acid, diluted with one gallon of water, for twenty-four hours, occasionally stirring the mixture. At the end of this interval, separate the liquid portion, and saturate to excess with bi-carbonate

of soda; a precipitate ensues. This must be removed by filtration, and the solution is then ready for use.

Iron, as an impurity, is always associated with native oxide of manganese, and when that substance is acted on by acids, giving rise to salts of the protoxide; the iron also unites with them and forms soluble compounds, and it becomes necessary to get rid of it by subsequent precipitation. This is facilitated by its showing less inclination to remain in saline combination, than the oxide of manganese; and consequently by taking advantage of this property, these metals can be readily separated when in solution, by heating in contact with carbonate of manganese or soda. The whole of the iron by these means is thrown down, and then by filtering, and using a larger quantity of bi-carbonate of soda, carbonate of manganese can be obtained pure.

ON SCUTELLARIA LATERIFLORA.

To the Editor of the American Journal of Pharmacy.

Respected Friend,—The article in the last No. of the Journal, page 370, by C. H. Cleaveland, M. D., on Scutellaria lateriflora, calls to mind some of my experience, coinciding with his, which I offer in hopes it may prove a benefit to some of the afflicted; and because a remedy which is not much known, or has but little reputation, requires testimony in its favor to call it into notice.

About twenty-five years ago my wife had quite a severe attack of tic doloureux on one side of her face, and as the scullcap had been a good deal spoken of as a remedy for hydrophobia, I determined to try it in this case, supposing its influence to be exerted on the nervous system. By the use of two or three pints of infusion, made with an ounce of the herb to a pint of boiling water and taken in doses of a wine-glassful three or four times a day, the disease appeared to be entirely relieved: in the course of a week or ten days, however, it returned, when the scullcap infusion was again resorted to, and continued several weeks, after which there was no return of the disease on that side. A few years after this period my patient was attacked on the other side of her face, but the diligent use of the scutellaria, as before, soon relieved her, and she has, ever since, remained free from that painful disease.

I have advised this remedy in other cases of tic doloureux, and it has had equal success in some, while in others it has failed. I have also given it in cases of tremor, from the abuse of alcoholic drink, with happy effect, and in one case of great depression of spirits produced by dyspepsia. As to the after effect of this nervine, my observation corresponds with that of Dr. Cleaveland.

Respectfully, WILLIAM STABLER.

Alexandria, Virginia, 10th mo. 18th, 1851.

ON HYDRANGEA ARBORESCENS.

By JOSEPH LAIDLEY, of Richmond, Virginia.

Few subjects of medical interest have claimed more of the time and talents of the medical profession, than has the formation and removal of stone in the bladder; and of the numerous agents which from time to time have arisen into notice as solvents or preventives, nearly all have fallen into merited disrepute, and left the field almost wholly to the surgeon. It is not so much with the disease, as viewed in reference to the presence of stone in the bladder, that the experimental therapeutist has cause to hope for success in finding a remedy, as in combating and removing that peculiar diathesis upon which the formation of stone supervenes, and thus preventing that terrible necessity of a resort to the lithotriptor or the gorget.

The object of the present paper is to call attention to one of our indigenous plants, the Hydrangea arborescens, in so far as its botanical and chemical characteristics are concerned. The root of this plant was first used with great success by Dr. E. Butler, a missionary to the Cherokee Indians—a situation where, from the liability of the Indians to stone in the bladder, a wide field for testing its virtues was afforded. Dr. S. Worcester Butler, of Burlington, N. J., son of the missionary, introduced it to the notice of the medical profession—(New Jersey Medical Reporter, Oct. 1850 p. 44—47.) Dr. E. Butler employed it in the form of a syrup, made either with sugar or honey; Mr. E. Parrish of Philadelphia prepares a fluid extract of it, which is probably the

best form for administering it. The plant has been employed with, we believe, considerable success by Dr. John Neill of Philadelphia, and by several other physicians.

"The effect of the plant," says Dr. S. W. Butler, "is to remove by its own specific action on the bladder, such deposits as may be contained in that viscus, provided they are small enough to pass the urethra. It has seemed also to have the power of alleviating the excruciating pain attendant on the passage of a calculus through the ureter."

It will be observed that the power of curing stone in the bladder is not claimed for it; it is only while the deposits are small, when in that stage of the disease known as gravel, that it is an efficient remedy; then by removing the nucleus, which if allowed to remain in the organ should increase in size and form stone, the disease is averted, and when employed at this stage, it is said to have proved beneficial in every instance, and "as many as 120 calculi have been known to come from one person under the use of this medicine." (*N. J. Med. Rep.*)

The desire of investigating the chemical constitution of a remedy which promises to be so valuable, induced the writer, some time ago, to undertake a proximate analysis of the root, a portion of which Dr. Butler kindly placed in his possession, but the quantity proved too small to afford satisfactory results, subsequently another supply was obtained from an examination of which the present results were chiefly drawn.

HYDRANGEA ARBORESCENS is an elegant indigenous shrub, known throughout the Southern and Middle States, where also it flourishes, growing abundantly on the sides of hills and mountains, and along the banks of streams: it is quite abundant in the Susquehanna and Schuylkill vallies. The flowers are often met with in boquets in the markets of Philadelphia. The root is the part that has been employed: it is formed of numerous radicles, sometimes not larger than a goose quill, sometimes half an inch or more in diameter, and these run often to a considerable length. They proceed from a caudex which sends upwards numerous divergent branches, which attain the height of from three to six feet. The root, when fresh, is very succulent, and can easily be cut, but when dry is very tough and resistant, for which reason Dr. Butler recommends that it should be cut up into short transverse sections

while it is fresh, which treatment also facilitates its drying. The bark of the dried root has a rather sharp, aromatic, not unpleasant taste, somewhat resembling cascarilla bark.

The following botanical description of the plant is from Gray's Manual of the Botany of the Northern United States.

NATURAL ORDER.—Saxifrageæ. Suborder Hydrangeæ. Sexual System. Decandria Digynia.

Generic characters.—Shrubs: leaves opposite, petals valvate in the bud, pistils fewer than the petals, a division of the calyx (usually two, united below, and separating at the top;) and the petals with the stamens (mostly 5—10) inserted on the calyx, which is free or more or less adherent to the ovary. Calyx withering, persistent. Petals rarely none. Pods several, many seeded. Seeds small anatropous, with a slender embryo in the albumen.

The *essential characters* are calyx-tube hemispherical, 8—10 ribbed, coherent with the ovary; the limb 4—5 toothed, ovate. Stamens 8—10 slender. Pod crowned with the two divergent styles, 2-celled below, many seeded, opening by a hole between the styles. Shrubs with opposite petioled leaves, and numerous flowers in compound cymes. The marginal flowers are usually sterile and radient, consisting merely of a membraneous coloured, flat, dilated and showy calyx. (The name is from Greek words signifying *water* and *vase*, probably in allusion to the vase-like shape of the pods.)

Specific characters.—Smooth, or nearly so; leaves ovate, rarely heart-shaped, pointed, serrate, green both sides; cymes flat. Rocky banks of northern Pennsylvania (on the Susquehanna, Carey,) and southward. Flowers, which appear in July, often all fertile, rarely all radient like the *garden hydrangea.*

CHEMICAL EXAMINATION.

1. A portion of the root was allowed to macerate in cold water for twenty-four hours, and transferred to a flask, which was then connected with a Liebig's condenser; heat cautiously applied by means of a sand bath. The distilled water was several times returned and redistilled, but the product, although highly charged with the odour of the plant, was tasteless and offered no indication of oil.

2. 500 grains of the powdered root were macerated in 4 ounces of ether for two days, introduced into a percolator, and ether added till 8 ounces of ethereal tincture were obtained. This was reduced to half an ounce by spontaneous evaporation, and afterwards to the consistence of an extract by a water bath below 100° F. Soon after the application of the water bath heat, the clear, pale, yellow liquid separated into a yellow flocculent substance and a colorless liquid, on which it floated. The extract as thus prepared, which amounted to 4 per cent. of the root, was of a light straw color, resinous, soft, but somewhat granular, as extract of quassia often occurs; the after impression, however, is sweetish. The extract consists almost wholly of the yellow flocculent matter above noticed. It is soluble in alcohol, ether, and solution of potassa, which last deepens its color, the solution having a light orange hue. This extract is insoluble in chloroform and in water, contains no fixed oil, and two grains of it when swallowed produced no sensible effect. It is probably soft resin.

3. 500 grains of the root, in powder, were treated with alcohol (85 per cent.) by maceration and displacement, to obtain eight ounces of tincture, which was evaporated at a heat below 120° F. to an extract. Near the end of the evaporation, small globules separated on the surface of the liquid, and remained unmixed in the extract. The alcoholic extract has a light brown color, an odor resembling that of the root, a bitter somewhat sweetish taste, and is but partly soluble in water. The root yielded 6 per cent.

4. 1000 grains of the root from which the matters soluble in alcohol and ether had been extracted, were boiled in several successive portions of water, the decoctions mixed, filtered and evaporated, yielding 65 grains of aqueous extract which had a brown color, slightly bitter taste, no odor, and easily reduced to a powder, resembling jalap in color.

5. A cold aqueous infusion was prepared and found to be neutral to test papers.

I. *Gum* was precipitated by subacetate of lead and by alcohol.

II. *Albumen* was indicated by corrosive sublimate and by coagulation by heat. A solution of gelatin gave no evidence of tannin.

III. *Starch*. The unexhausted dregs from the cold infusion

boiled in water afforded a liquid which, after cooling, yielded a blue color with iodine.

IV. A decoction of the root was boiled with carbonate and muriate of ammonia to remove any lime that might be present, and filtered. This liquid was rendered milky by antimoniate of potassa in solution, and by standing a slight precipitate occurred indicative of *soda*.

V. Sulphuric acid caused a precipitate in the decoction.

VI. A portion of decoction freed from lime, as in IV, yielded slight precipitates with phosphate of soda, and solution of ammonia, occasioned by *magnesia*.

VII. Chloride of barium produced a precipitate only partly soluble in nitric acid.

VIII. An alcoholic solution of bichloride of platinum indicated the presence of potassa.

The decoction, owing to the large proportion of starch which it contains is always very thick; made in the proportion of an ounce to half a pint, it resembles syrup in consistence. The extracts are all deliquescent, absorbing after a time almost sufficient moisture to render them semi-fluid. Several experiments were made with the view of ascertaining the presence of an alkaloid.

1. By making an acidulated aqueous infusion, neutralizing with ammonia, precipitating by tannic acid, the precipitate washed and mixed with hydrate of lime, dried and powdered. This powder was treated with boiling absolute alcohol, and the alcoholic liquid evaporated. A yellow, apparently amorphous matter resulted, but in too small amount to admit an investigation of its properties.

2. 10,000 grains of the root in coarse powder, was macerated in water for twenty-four hours, it was then boiled twice successively for twenty minutes in twelve pints of water, the decoctions strained, mixed and evaporated in a water-bath to a syrupy consistence. The dregs from the decoction were next treated with one gallon of alcohol, 95 p. c., and then with one quart of ether by displacement; these tinctures were reduced to a syrupy consistence, mixed with the aqueous extract, and the evaporation continued till the alcohol and ether were dissipated. The extract as thus prepared was divided into three portions.

3. One portion of extract, 2, was mixed with 250 grains of calcined magnesia, and digested on a sand-bath for four hours, it was then thrown on a filter, washed and dried; the result, exclusive of loss, weighed 260 grains; of (*a.*) this powder 100 grains was placed in a flask and boiled twice successively in one and a half fluid ounce of chloroform, the liquid was filtered and evaporated below 180°, yielding a soft, resin-like substance, weighing one and a half grains; it is soluble in alcohol, and is neutral to turmeric and litmus.

4. 100 grains of the powder (3) was treated as in the last experiment, using absolute alcohol instead of chloroform—the result was a soft resinous substance, resembling 3*a.*, weighing two grains, soluble in chloroform, partly soluble in ether, neutral to litmus and turmeric.

5. One third of the extract, 2, was boiled for one hour, with four ounces of solution of potassa, three ounces of chloroform were added, and the boiling continued a few minutes longer; after the chloroform had subsided, it was separated from the supernatant liquid, and allowed to evaporate spontaneously. An extract like substance resulted, weighing twenty grains, sparingly soluble in ether and alcohol, neutral to turmeric and litmus.

These results tend to prove the absence of an alkaloid; the matters obtained as above, are almost wholly soft resin, and proved, except 1, to be inert, when tried by the writer upon himself.

Examination of the Ashes.

(*a.*) 2000 grains of the root were incinerated in a crucible, yielding 100 grains of an almost white ash.

(*b.*) Thirty-three and a third grains of the ashes were displaced with boiling distilled water, till all the salts soluble in that menstruum were dissolved: the solution was alkaline to turmeric, and reddened litmus papers, and, on evaporation, yielded seven grains, or twenty-one per cent. of a white saline matter.

(*c.*) To three grains of the latter was added one ounce of distilled water, but this quantity being insufficient to dissolve it, a few drops of muriatic acid was added, which caused a perfect solution. The acid caused a brisk effervescence, and the evolution of an odorless gas, showing the presence of carbonates.

(*d.*) The addition of hydrosulphuric acid to *c*, followed by heating, caused no precipitate.

(*e.*) To *c.* was added solution of ammonia until an alkaline reaction was induced, when the addition of hydrosulphate of ammonia caused a white precipitate.

(*f.*) The addition of phosphate of soda and solution of ammonia, caused a white precipitate in *d*, probably of *lime.*

(*g.*) To *c.* was added some carbonate and solution of ammonia, the latter in excess; on boiling the mixture, a copious white precipitate was occasioned; this was washed, separated by filtration and dissolved in weak muriatic acid, in which the addition of solution of ammonia and oxalic acid caused a precipitate of *oxalate of lime.*

(*h.*) The liquid *c.* gave a yellow precipitate on the addition of an alcoholic solution of bichloride of platinum, indicative of *potassa* in small amount.

(*i.*) The liquid *c.* was neutralized with bicarbonate of potassa and solution of antimoniate of potassa added, a precipitate was occasioned indicating the presence of *soda.*

(*j.*) Nitrate of silver added to an aqueous solution of *b.* produced a yellow precipitate, soluble in nitric acid; chloride of barium and subacetate of lead, occasioned white precipitates; that by the first being soluble nitric and muriatic acids, and that by the lead salt, soluble in nitric acid.

(*k.*) The residue of the ashes undissolved by water was tested with water acidulated with muriatic acid; the addition of the acid occasioned brisk effervescence. The solution on evaporation yielded 42½ grains of a slightly yellowish matter.

(*l.*) A portion of this was dissolved in water acidulatad with muriatic acid.

(*m.*) To a portion of *l.*, solution of hydrosulphuric acid was added and heated; no change resulted.

(*n.*) The liquid *l.*, gave a white precipitate with sulphuric acid, soluble in a large excess of water; in another portion to which ammonia had been added, oxalic acid occasioned a precipitate, soluble in nitric and muriatic acids, insoluble in oxalic and acetic acids, indicating *lime.*

(*o.*) To the liquid *l.* was added sufficient solution of ammonia to render it neutral, causing also a gelatinous precipitate, the

addition of hydrosulphate of ammonia changed the latter to dark green, the precipitate was separated by filtration, washed, and dissolved in water acidulated with sulphuric acid; with portions of this solution, ammonia and solution of potassa caused white precipitates; ferrocyanide of potassium a blueish white precipitate which soon changed to deeper blue; ferrocyanide of potassium produced a precipitate of a dark-blueish-green color, which was completely destroyed on the addition of potassa. Tincture of galls produced no change. These experiment indicate the presence of a *proto-salt of iron*, notwithstanding the heating and exposure to which in incinerating the root it was subjected. To confirm this opinion, several other experiments corresponding with the above results, were made with the liquid *l*.

(*p*.) The liquid *l*. was boiled with carbonate and muriate of ammonia, to remove lime, and filtered; the addition of phosphate of soda caused a precipitate soluble in acetic acid, indicative of *magnesia*.

(*q*.) Chloride of barium produced a precipitate but partially soluble in nitric and hydrochloric acids, and muriate of ammonia showing the presence of *sulphuric* acid.

Other experiments indicated the presence of *sulphuric* and *phosphoric* acids.

The constituents of the root of Hydrangea arborescens, as the above experiments indicate, are *gum*, *albumen*, *starch*, *resin*, *soda*, *lime*, *potassa*, *magnesia*, *sulphuric* and *phosphoric acids*, and a *proto-salt of iron*. In regard to the active principle of the plant, the writer must regret that he has not isolated it, if indeed, the activity be due to any individual constituent, or to a *combination* existing in the root; the latter seems the most probable, and, it may be that much of its efficacy is due to the large amount of mucilaginous matter which forms an important constituent of this plant. But whatever its virtues may be owing to, it is to be hoped that the real therapeutic merits of the root will be satisfactorily determined by a more extensive, successful application of it in cases of the troublesome disease for which it has been so highly recommended.

ON CERATUM CANTHARIDIS.

To the Editor of the American Journal of Pharmacy.

Dear Sir,—Having for some time been in the habit of using a a peculiar formula for the preparation of the Cerat. Cantharidis, of the U. S. Pharmacopœia, I have thought it advisable to acquaint you with it, in order that it may be given publicity if deserving of it, which I take the liberty to leave to your superior judgment. It has no doubt frequently occurred to many that the cerate prepared according to the present formula, is too hard in consistence to be spread with facility with a spatula in winter, but of course in less degree in summer.

To obviate this defect, I have been in the habit of substituting for a portion of the *resin*, an equal portion of the liniment. cantharidis of the U. S. P. This I have found to render the cerate more homogeneous, and to avoid its objectionable hardness, and although adding slightly to its strength, I have not found this at all objectionable to many of the first physicians of Washington who have used it, but rather desirable, on account of the variation in the strength of the cerate arising from the quality of the flies, and the amount of care and attention bestowed upon its preparation. The formula is as follows:

℞ Carthar. Pulv. ℔i.
Cera. flav.
Adipis *aa* ℥viii.
Resinæ
Linim. Canthar. *aa* ℥iv.
M. S. A.

I add the liniment to the resin, lard and wax at the lowest temperature at which they are liquid, and then add the flies as directed by the Dispensatory. The above are the proportions for warm weather: in cold weather the quantity of liniment may be increased, say to ℥vi. Any modification of this which your superior judgment may dictate will add greatly to its value; but it has not escaped me that it may occur to you, that the simple *addition*

*[The writer is perhaps not aware that in the present formula of Pharm., 1850, the consistence of this cerate has been changed to meet the difficulty noticed by himself in common with others.—Ed.]

of a sufficient quantity of the lin. canth. to render the cerate softer, would be equally as good as the above. I do not think so, having tried both; but if either of these suggestions seem to you worthy of notice, my object will be gained by your making the disposal of it which to you may seem best. Not being now an apothecary, I do not think it necessary to subscribe my name, but will take the liberty of signing myself

Respectfully yours, A. Z.

Georgetown, D. C., Sept. 22d, 1851.

PROCEEDINGS OF THE CONVENTION OF PHARMACEUTISTS AND DRUGGISTS, HELD IN THE CITY OF NEW YORK, OCT. 15, 1851.

In pursuance of a call issued by the College of Pharmacy of the City of New York, a Convention of Delegates from the different Colleges of Pharmacy in the United States assembled at the College Rooms in New York, at 5 o'clock, P. M., on Wednesday, the 15th of October. Delegates from Philadelphia and Boston were in attendance. The Maryland College (at Baltimore) and the Cincinnati College were not represented, although delegates from each had been previously reported to the committee of arrangements in New York. A communication of some length was received from the Cincinnati delegation.

The convention was organized by calling Mr. Charles Ellis, of Philadelphia, to the Chair, and Dr. Samuel R. Philbrick, of Boston, to act as Secretary pro tem. A committee was then appointed by the nomination of each delegation, consisting of Messrs. Samuel M. Colcord of Boston, Alfred B. Taylor of Philadelphia, and George D. Coggeshall of New York, to examine credentials and nominate officers for the convention. The committee retired, and on their return reported the credentials satisfactory, and proposed Dr. C. B. Guthrie* of New York as President, and Mr.

* [To those who are not acquainted with Dr. Guthrie, it may appear singular that the President of a Pharmaceutical Convention should be a physician. To such we will say, that Dr. Guthrie, though a graduate of medicine, and at one time a practitioner, has for many years past been a

Alfred B. Taylor of Philadelphia as Secretary, who were unanimously confirmed.

Dr. Guthrie, on taking the chair, made a few remarks, expressive of his sense of the honor conferred by appointing him presiding officer of the first convention of the kind ever held in the United States, and explanatory of the objects of the convention, which were in accordance with the growing feeling amongst druggists and pharmaceutists of the necessity to establish standards of the qualities of imported drugs and medicines for the government of the United States Inspectors at the different ports, and, in addition, to act upon such matters of general interest to the profession as may be presented to the consideration of the convention.

Two reports were presented by the New York Delegation; one from Messrs. Guthrie and Coggeshall, and the other from Mr. Merrick, embodying their views upon the subject of standards, and also in regard to false drugs which should be excluded. Some difference of opinion existed in reference to the admission of certain kinds and qualities of drugs, which, although in demand, were deemed by the majority as not contributing to the benefit of medicine, and as perhaps affording inducements to the designing.

A communication from the Cincinnati delegates was read, after which Mr. Restieaux, of Boston, read an interesting statement of the working of the drug law in that city. A letter from Dr. David Stewart, Inspector of drugs at Baltimore, and a member of the Baltimore delegation, who was unable to be present, was also read, expressing his views in regard to the subject.

A general discussion ensued upon various topics connected with the business of the convention, and resulted in the appointment of a committee, consisting of Messrs. Procter of Philadelphia, Restieaux of Boston, and Coggeshall of New York, to consider the several communications, and arrange the general plan of business, and report at the next sitting.

The convention then adjourned to Thursday at 12 o'clock.

Second Sitting, Oct. 16th.—The convention met at 12 o'clock.

druggist. The deep interest taken by Dr. G. in the working of the law for the inspection of imported drugs, and his position in the New York delegation very naturally suggested his name as chief officer of a convention specially called in reference to that Act.—EDITOR.]

The committee appointed yesterday made a report in reference to the special object of the convention, followed by a preamble and resolutions in reference to a general organization of Pharmaceutists throughout the United States, which was read.

The report was considered in sections with full, deliberate, and very interesting discussion, in which the members generally participated, and after some amendments, the following portions of the document which embrace the views and recommendations of the convention were adopted.

"1. We consider that the Law is already ample in its general provisions in guarding the admission of drugs, medicinal substances and preparations, under the reference which it distinctly requires to the Pharmacopœias and Dispensatories specified in it; we think it right to designate a few prominent articles for which positive standards are required.

"2. All drugs and chemicals employed in manufacturing *chemical preparations* used in medicine, may be admitted of less than standard purity, upon sufficient bonds being given that such articles are solely to be devoted to said uses.

"3 Opium should not contain less than *eight* per cent of pure morphia, unless intended for manufacturing [into morphia, codeia and other chemical principles. ED.] as above stated.

"4. Two varieties of scammony should be admitted, 'Aleppo cake scammony,' that contains not less than 40 per cent. of *true scammony resin;* and the so-called Virgin scammony that contains not less than 65 per cent. of the same resinous principle.

"5. All elaterium not containing 25 per cent. of *elaterin* should be rejected.

"6. Iodine, unless intended expressly for manufacturing, should not contain more than 3 per cent. of water, and should be free from all other impurities.

"7. Gum resins used solely in medicine, as assafœtida, ammoniac, &c., should be rejected when they contain more than 15 per cent. of extraneous matter, whether accidental or designed.

"8. Barks derived from the Cinchonas growing in the northern Provinces of South America, and which contain *cinchonia* with or without *quinia*, should be admitted; all other barks falsely sold as cinchona bark, should be rejected. [This section is intended to apply to the false barks derived from the region mentioned,

Brazil, and the West Indies, which contain none of the cinchona alkaloids, and not to the Peruvian barks properly so called. Ed.]

"9. As there is no good reason for the introduction of European rhubarb into this country, owing to its inferior strength, we recommend that all rhubarb of European origin be excluded. [This section was introduced with a view to guard against the importation of cheap European rhubarb for the purpose of adulterating the Asiatic varieties, it having been used for that purpose. Ed.]

"10. The uninjured portion of partially damaged drugs, &c., may be admitted, provided the importer will, under the superintendence of the Inspector, cause all the damaged portions to be removed:—and drugs otherwise good, if loosely admixed with extraneous substances to an extent that in the proper construction of the law would cause them to be rejected, may be passed, if the importer will remove all such extraneous parts under the direction of the Examiner.

"11. It is recommended that the Examiner of each port be required to collect and deposit in his office a cabinet of specimens of drugs, chemicals, and permanent medicinal preparations, as complete as practicable, to be used for comparison in the course of inspection.

"12. And finally this Convention respectfully and earnestly recommends, as the useful working of the law, after all, depends mainly on the integrity and ability of the Examiners, that the greatest carefulness should be exercised by the appointing power in the selection of these officers; in furtherance of which the Colleges of Pharmacy would cheerfully render their assistance if solicited."

The Convention having disposed of that portion of the report which related to the object for which it was more especially called; the Preamble and Resolutions brought forward by the Committee were considered and adopted, viz:

"*Whereas*, The advancement of the true interests of the great body of pharmaceutical practitioners in all sections of our country is a subject worthy of earnest consideration; and *whereas*, pharmaceutists, in their intercourse among themselves, with physicians and the public, should be governed by a code of ethics calculated to elevate the standard and improve the practice of their art;

and *whereas*, the means of a regular pharmaceutical education should be offered to the rising pharmaceutists by the establishment of Schools of Pharmacy in suitable locations; and *whereas*, it is greatly to be desired that the united action of the profession should be directed to the accomplishment of these objects; therefore,

"*Resolved*, That in the opinion of this convention much good will result from a more extended intercourse between the pharmaceutists of the several sections of the Union, by which their customs and practice may be assimilated; that pharmaceutists would promote their individual interests, and advance their professional standing, by forming associations for mutual protection, and the education of their assistants when such associations have become sufficiently matured; and that, in view of these important ends, it is further

"*Resolved*, That a convention be called, consisting of three delegates each, from incorporated and unincorporated pharmaceutical societies, to meet at Philadelphia on the first Wednesday in October, 1852, when all the important questions bearing on the profession may be considered, and measures adopted for the organization of a National Association, to meet every year."

In accordance with these resolutions, it was resolved that the President of the Convention be requested to transmit an invitation to the authorized bodies at least three months previous to the time of meeting, desiring such bodies to acquaint him with the names of the delegates they may appoint.

On motion, it was resolved, that the New York delegation be appointed a committee to lay the report and proceedings of this convention before the Secretary of the Treasury of the United States, and afterwards to have them published in pamphlet form.

Dr. Philbrick, of Boston, offered the following preamble and resolution, which were adopted:

Whereas, To secure the full benefits of the prohibition of sophisticated drugs and chemicals from abroad, it is necessary to *prevent home adulteration*, therefore,

Resolved, That this convention recommend to the several Colleges to adopt such measures as in their respective States may be best calculated to secure that object.

On motion of Mr. Colcord, of Boston, it was

Resolved, That a committee of three be appointed by this convention, to act as a standing committee, to collect and receive such information as may be valuable, and memorials and suggestions from medical and pharmaceutical associations, to be presented to the next convention.

The President appointed G. D. Coggeshall of New York, S. M. Colcord of Boston, and W. Procter, Jr. of Philadelphia, as the committee.

A vote of thanks to the officers was passed, and then the convention adjourned, to meet in Philadelphia on the first Wednesday in October, 1852.

REPORT OF A JOINT COMMITTEE OF THE PHILADELPHIA COUNTY MEDICAL SOCIETY AND THE PHILADELPHIA COLLEGE OF PHARMACY, RELATIVE TO PHYSICIANS' PRESCRIPTIONS.

(*Published by order of the Board of Trustees of the Philada. Coll. of Pharm.*)

The joint Committees of the Philadelphia County Medical Society, and of the Philadelphia College of Pharmacy, appointed for the purpose of considering the means best adapted to prevent the occurrence of mistakes in the compounding of the prescriptions of Physicians by Apothecaries, beg leave to report that they have given to the subject all the attention that its importance demands, and present the following hints as the results of their joint deliberations. They have taken the liberty of adding, also, a few general hints on the relations that should exist between physicians and pharmaceutists.

A. *In Respect to Physicians.*

1. Physicians should write their prescriptions carefully and legibly, making use of good paper, and, whenever possible, of pen and ink. When obliged to write with a pencil, they should take the precaution to fold the prescription twice, so as to prevent its being defaced.

2. The nomenclature of the United States Pharmacopœia is becoming annually more in favor with pharmaceutists; a statement attested by the fact that 1500 copies of the book of Latin Labels for shop furniture, published by the Philadelphia College of Pharmacy, have been disposed of within three years. Physicians are

also becoming more alive to the merits of our national Codex, and they are respectfully urged to familiarize themselves with its nomenclature, and to adhere to it strictly in their prescriptions.

3. The numerous treatises on Materia Medica, Pharmacy and the Practice of Medicine, of English origin, that are reprinted in this country, notwithstanding, they are generally interlarded with the formulæ of our own Pharmacopœia, tend, nevertheless, very much to confuse the physician and apothecary, in the use and exact meaning of terms in prescriptions. To obviate the difficulties thus occasioned, the physician should, when he prescribes a medicine, which is not officinal, nor in common use, state on his prescription, either in a note at the bottom, or within parenthesis, following the article, the authority or work from whence it is derived, as "Griffith's formulary"—"Ellis' Formulary"—"Braithwait's Retrospect," etc.

4. Physicians would lessen the risk of errors in their prescriptions, and increase the chances of their detection should they be made, by observing the following hints.

1st. Write the name of the patient at the top of the prescription, unless a good reason prevents this being done; in which case, it should be expressed as for Mr. G—, Mrs. R.—, or Mrs. S.'s child, or for Master T—, so as to convey to the apothecary some idea of the age of the patient.

2d. The date and name of the physician or his initials, should always be appended, and, whenever practical, the dose and mode of administering the medicine directed.

3d. When an unusually large dose of an active medicine is prescribed, as opium, morphia, elaterium, strychnia, etc., let such names be put in *italics*, and the quantity or quantities repeated in writing enclosed within a parenthesis; thus:—℞ Morphiæ Sulphatis grs. vj. (six grains.) Div. in chart. vj.

4th. When an active substance is to be used externally, it should be so stated on the prescription; thus, "For external application"—"To be applied to the part as directed," etc.

5th. The quantities of each article should be placed in a line with the name, and not below it and in using the Roman numerals, the *i*'s should be dotted correctly.

6th. The occasional practice of writing the directions intended for the patient in *latin*, and especially in abbreviated latin, is un-

called for, and attended with some risk; it is far safer to write them in English, and without abbreviation or the use of figures, unless these are well and distinctly formed.

B. *In Respect to the Apothecary.*

1st. The apothecary should hesitate to dispense a prescription, the handwriting of which is so imperfect as to render the writer's meaning doubtful—especially if it involves agents of a poisonous or irritating character—unless he is able, from collateral circumstances, to satisfy himself of the intent of the prescriber. In such a case he should delay the delivery of the medicine to the patient until he can see the physician, and in doing so he should avoid committing the latter by agreeing to send the medicine when it is ready.

2d. The apothecary is justified in the same means of delay, if he, after deliberate consideration, believes that the physician has inadvertently made a mistake in the quantity or dose of the article or articles prescribed; always keeping in view the physician's reputation as well as his own. Every respectful application, in such cases, to a physician, should he met in good faith and with kind feeling, even though no error should prove to exist.

3d. In his demeanor and language, the apothecary should cautiously avoid compromising the physician, unless it be unavoidable, in which case honesty is the best policy, and the patient or his messenger should be told that it will be necessary to have an interview with the physician previously to compounding his prescription.

4th. The apothecary is not justifiable in making inquiries relative to the patient or his disease, or remarks relative to the character or properties of the medicines prescribed, that are uncalled for, or likely to convey a wrong impression, through an ignorant messenger, to the patient, excepting it be done in a case where he has doubts in regard to the prescription, and wishes to satisfy himself, and here he should act with great discreetness.

5th. When an apothecary is asked his opinion of a physician's prescription in a manner that indicates want of faith in the prescriber, he should waive the question, unless by a direct answer he should be able to restore that confidence. When asked the nature of the ingredients he should be guided in his answer by circumstances, avoiding to give the desired information, when he believes

it would be contrary to the wish of the physician, or attended with injurious consequences. In other cases he should use his own judgment.

6th. Physicians being often unacquainted with practical pharmacy, pay little attention to the order in which the several articles entering into a prescription are arranged, with the view to facilitate the operations of dispensing. It hence becomes the first duty of the apothecary carefully to read the prescription and fix the proper order in his mind. He should, at the same time, acquire the habit of considering the quantities ordered in relation to the usual doses, and, also, the general bearing of the prescription; and a constant resort to to this practice, based on due knowledge, must almost inevitably detect mistakes, if any have been made.

7th. Apothecaries should accustom their assistants to study prescriptions in this light, and to acquire such a knowledge of the doses and therapeutical uses of medicines as shall serve to guide them in avoiding errors.

8th. The apothecary, when engaged in dispensing a prescription, should, as far as possible, avoid mental preoccupation, and give his attention fully to his task. He should acquire the habit of *always* examining the label of the bottle before using its contents, and he should satisfy himself that he has read the prescribed quantity correctly, by referring to the prescription anew before weighing out each article. It is also, a useful precaution to have bottles containing mineral or vegetable poisons, distinguished by some prominent mark.

9th. As the conscientious discharge of his duty should be the aim of every apothecary, seeing that on his correct action depends, in no slight degree, the usefulness of the physician, no pains should be spared to secure the efficiency of the medicines dispensed, whether they be drugs or preparations. The latter should always be prepared of full strength, and according to the formulæ recognized by the United States Pharmacopœia, unless when otherwise specially ordered.

10th. The apothecary should always label, and number correctly, all medicine dispensed by him on the prescription of a physician; he should, also, invariably, transcribe on the label, in a plain legible hand-writing, the name of the patient, the date of the prescription, the directions intended for the patient, and the name or the initials of the prescriber.

11th. The original prescription should always be retained by the apothecary, whose warrantee it is, in case of error on the part of the prescriber. When a copy is requested, if, as in many instances, no objection can be urged, it should be a *fac-simile* in language and symbols, and not a translation.

12th. In no instance is an apothecary justifiable in leaving his business in charge of boys, or incompetent assistants—or in allowing such to compound prescriptions, excepting under his immediate and careful supervision.

13th. In justice to his sense of the proper limits of his vocation, to the medical profession, and to his customers, the apothecary should abstain from prescribing for diseases, excepting in those emergencies, which occasionally occur, demanding immediate action, or, in those every day unimportant cases where to refuse council would be construed as a confession of ignorance, calculated to injure the reputation of the apothecary, and would be attended with no advantage to either physician or patient.

14th. The sale of quack or secret medicines, properly so-called, constitutes a considerable item in the business of some apothecaries. Many of the people are favorably impressed towards that class of medicines, and naturally go to their apothecaries for them. It is this which has caused many apothecaries to keep certain of these nostrums, who are ready and willing to relinquish the traffic in them, but for the offence that a refusal to supply them to their customers, would create. At present all that the best disposed apothecary can be expected to do, is to refrain from the manufacture himself, of quack and secret medicines; to abstain from recommending them, either verbally or by exhibiting show-bills, announcing them for sale, in his shop or windows; and to discourage their use, when appealed to.

15th. Having in view the welfare of the community and the advancement of pharmaceutic science and interest, it is all important that the offices of prescribing and compounding medicines should be kept distinct, in this city and surrounding districts. All connection with, or moneyed interest in apothecary stores on the part of physicians, should, therefore, be discountenanced. With respect to the pecuniary understanding said to exist in some instances, between apothecaries and physicians, we hold, that no well disposed apothecary or physician would be a party to such a contract, and consider the code of Ethics of the College of Phar-

macy and the Constitution of the Philadelphia County Medical Society as sufficiently explicit on this subject.

16th. In reference to the patronage on the part of Physicians of particular apothecaries, we are of the opinion, as a general rule, that Graduates in Pharmacy should be encouraged in preference to others of the same date of business, and whilst admitting the abstract right of the physician to send his prescription where he pleases, we think that justice should dictate the propriety of his encouraging the nearest apothecary deserving of his confidence and that of the patient.

D. Francis Condie,
Wm. Maybury,
G. Emerson.
} *Committee of County Medical Society.*

William Procter, Jr.,
H. C. Blair,
John H. Ecky,
} *Committee of Phila. College of Pharmacy.*

EXAMINATION OF A CONSTITUENT OF CAPSICUM.

By John T. Plummer, M. D., of Richmond, Ind.

Tincture of capsicum, made by displacement, in the course of a few days after the filtration, yielded a bulky, but very light, white flocculous, distinctly separated from the liquid but remaining suspended in it. Filtered out it was found:—

1. Unctuous or soapy to the touch.
2. White.
3. Easily saponifiable with potash, forming a pearly looking compound.
4. Neither acetic nor the mineral acids acted on it.
5. Insoluble in water.
6. Insoluble in cold alcohol; yet the displacement was effected by alcohol at the temperature of the season.
7. Tasteless.
8. Soluble in essential oils.
9. Very sparingly soluble in boiling alcohol, separating, on cooling, in balls or conglomerations of hollow, delicately thin, transparent, microscopic spherules.
10. At 100° (Fah.) it leaves a greasy looking spot on paper; at a higher temperature, to soften and render the paper transparent.

11. Not to soften in boiling water.

12. To soften like dry glue or some resins, but not to fuse, when heated on glass short of the temperature of 200°, and to be converted into a brittle, resin-like, light brown substance, giving off a light blue smoke, having an evident odor of wax.

13. About, or perhaps considerably above the temperature of 200°, the brittle brown substance of 12 became blackish, and the substance finally evaporated, leaving a white, brittle, insipid ash, which was insoluble in water.

PHARMACEUTICAL NOTICES.

By A. B. Taylor.

Syrup of the Iodide of Zinc.

Iodide of Zinc has been used both internally and externally, though we believe less frequently in the former than in the latter method. It is tonic and astringent in its action, combining to some extent the properties of Iodine and of the Zinc preparations; though, like the Iodides of Lead, Iron, Silver and Mercury, apparently exhibiting chiefly the medicinal action of its metallic constituent. Perhaps the best general form for administration is that of a syrup, as it is otherwise (like the Iodide of Iron) exceedingly liable to decomposition. Dr. A. S. Thompson, of London, several years ago suggested such a preparation; but we have not seen any published formula for it. Having had occasion to prepare it, we have used the following:

℞.	Iodine - - - -	℥xii—ʒij.
	Zinc - - - -	℥j.*
	Sugar - - - -	lb.i. (*avoir.*)
	Water - - - -	f℥ix. or sufficient

to make one pint of Syrup.

The Zinc having been *finely granulated*, is added (together with the Iodine) to the water, in an evaporating dish, and gently heated, until the Iodine is completely taken up by the Zinc,—which is

*The combining proportions of the two elements in the salt are about 4 parts of Iodine to 1 part of Zinc; but it is advisable to have a considerable excess of zinc in preparing the iodide.

known by the solution becoming colorless. This solution is immediately filtered, while yet hot, on to the sugar (previously put into a convenient wide-mouthed bottle, upon the side of which a pint measure has been marked,) and sufficient water added to the filter to make a pint of the syrup. If the sugar does not dissolve readily, a gentle heat may be applied. The Syrup thus obtained contains one drachm of the Iodide of Zinc in each fluid ounce. It is perfectly clear and colorless in appearance, and has a strong styptic and peculiar metallic taste.

Castillon's Powders.

An excellent diet for invalids, in cases of indigestion, chronic dysentery, &c., known as "Castillon's Powders," has been considerably employed by the medical profession. Although a somewhat popular article, we are not aware that the formula has been given to the public in any of our journals, and accordingly present it here:

℞.	Pulv. Sago. - - -	ʒiv.
	" Salep. - - -	ʒiv.
	" Tragacanth. - -	ʒiv.
	" Testæ Præp. - -	ʒi.

The ingredients to be well mixed, and to be divided into twelve powders.

A small quantity of cochineal has generally been added to the mixture for the purpose of coloring it; but it is conceived to be preferable without it.

For use, each powder is to be boiled with a pint of milk; which may be sweetened and flavored to suit the taste.

Dr. Jackson's Pectoral Syrup.

A prescription of Prof. Samuel Jackson of Philadelphia, familiarly known as his "Pectoral Syrup," has obtained a considerable reputation from its beneficial action in cases of cough, colds, &c. We believe the prescription was originally given to Mr. E. Durand, but as the Syrup has for some time been a standing preparation with many of our druggists, we have thought that a published formula would be acceptable, both for the purpose of giving its benefit to those who may not be familiar with its composition, and

of promoting uniformity among those who may already be accustomed to prepare it. Dr. Jackson has furnished us with the following recipe:

℞.	Sassaf. Medullæ - - -	℥i.
	Acaciæ - - - - -	℥i.
	Sacchari - - - -	lb.i ¾.
	Morphiæ Muriat. - - -	gr. viii.
	Aquæ - - - - -	O i. or *q. s.*

The Sassafras Pith and Gum Arabic are to be put into the water, and allowed to stand ten or twelve hours, with occasional stirring. The sugar is to be dissolved (cold) in the mucilage thus obtained, which after being strained, should be made to measure two pints by the addition of water. Lastly, the Muriate of Morphia is to be dissolved in the Syrup.

A small quantity of Hoffman's Anodyne was formerly added to prevent fermentation: but this has been omitted as being unnecessary when the syrup is carefully prepared.

This syrup contains one-fourth of a grain of Muriate of Morphia (we believe originally ½ gr.) in each fluid ounce; and is given in doses of a teaspoonful every two or three hours, according to circumstances.

Dr. Jackson's Pectoral, and Ammonia Lozenges,

Are two other preparations of the same physician, and designed for a similar purpose with the above. They have both become somewhat popular remedies, and merit publication. The following is the formula for the "Pectoral Lozenges:"

℞.	Pulv. Ipecac. - - - -	gr. x.
	Antimon. Sulph. Præcip. - -	gr. v.
	Morphiæ Muriat. - - -	gr. vi.
	Pulv. Acaciæ " Sacchari " Ext. Glycyr.	*aa* ʒxi.
	Tinct. Tolut. - - - -	ʒiv.
	Ol. Sassaf. - - - -	gtt. iv.

The above to be made into a stiff mass with simple syrup, and divided into 200 lozenges, or into lozenges of ten grains each.

The formula given by Dr. Jackson for the "Ammonia Lozenges," is as follows:

℞.	Ammoniæ Muriat.	- - -	ʒifs.
	Morphiæ Muriat.	- - -	gr. iii.
	Pulv. Ulmi	- - - -	ʒvi.
	" Acaciæ	}	
	" Sacchari		
	" Ext. Glycyr.	} *aa*	ʒvii.
	Tinct. Tolut.	- - - -	ʒiii.
	Ol. Gaultheriæ	- - - -	gtt. iv.

To be made with syrup as above, and divided into 180 lozenges, or into lozenges of 10 grains each.

OXALIC ACID GENERATED BY THE ACTION OF NITRIC ACID ON OIL OF AMBER.

By John T. Plummer, M. D., of Richmond, Ind.

About the middle of the present year, (1851) I subjected a small quantity of oil of amber to the action of nitric acid, for the purpose of making artificial musk. After the materials had undergone the usual change, I set them aside; and various avocations afterward claiming my attention, I did not separate the acid from the plastic mass until three or four months had elapsed. After pouring off the acid, and adding warm water to the mass, I thought I heard an obscure crepitation in the vessel, like that occasioned by the solution of oxalic acid. Thinking it possible that, as is the case with various animal and vegetable substances, oxalic acid might have been generated by the reaction of the mineral acid on the *oleum succini*, I examined carefully the waxy mass, and found small groups of elongated, but not quite acicular crystals, and during the process the crepitation alluded to became very apparent.

To the solution of these crystals I applied the usual tests of oxalic acid, chloride of calcium, and chloride of barium, and sulphate of lime; all of these reagents produced a white precipitate; the two first acting immediately, and yielding a copious deposit; the last was much more tardy in its action. The precipitates were easily soluble in nitric and in hydrochloric acids.

ON CASSIA FISTULA.

By Dr. X. Landerer,

Hon. Member of the Pharmaceutical Society of Great Britain, Professor in the University of Athens, Pharmacien to the King of Greece, &c.

Pharmacologists distingish the following varieties of the drug called Cassia Fistula, namely:

1. *Cassia Levantica.*
2. *Cassia Ægyptiaca.*
3. *Cassia Occidentalis.*
4. *Cassia fistula Brasiliensis seu Marylandica.* [?]

Respecting the second of these, Egyptian Cassia Fistula, I have received some particulars not wholly without interest, which I will venture briefly to detail.

Among laxative and resolvent medicines none is more frequently employed in the East, than Cassia Fistula administered in the form of decoction, or as an electuary mixed with a sweet or acidulous beverage, as Bosá or Scherbet.

The use of Cassia has of late much diminished, and the culture of the trees in Egypt is becoming somewhat neglected. At the present day the *Cassia fistula*, Lin., grows in the neighborhood of Aphti, a village near the towns of Damation and Feraskuri, which are about two days' journey from Alexandria. The trees, which are here sufficiently numerous to form a little forest, are from forty to fifty feet in height, and frequently exceed two feet in circumference; their age is estimated by the villagers at from two to three centuries. In January and February the trees flower; the large yellow very odorous blossoms are employed by the inhabitants of the country as a perfume for the clothes. The collection of the fruit commences in June and lasts till August. Loaded with thousands of long pendulous fruit reaching to the earth, the Cassia trees at this period present a most interesting appearance, reminding one by their pendant branches of the weeping-willow. Under their shade the Arab protects himself from the burning heat of the sun, and there also seeks shelter at night.

The quantity of Cassia Fistula carried to the bazaars of Alexandria and Cairo amounts to 500 quintals [50,000 pounds weight per annum], the half of which is consumed in Egypt, the remainder being exported to Constantinople, Marseilles, Triest and Odessa.

The Egyptians imagine the immature fruit far superior to that collected when perfectly ripe, and by the dealers the smaller pods are preferred.

[There is some ambiguity in the author's enumeration of the varieties of Cassia pods, which are the produce of two distinct species, namely :—

1. *Cassia fistula* Lin., *Cathartocarpus fistula*, Persoon. The pods of this species may be distinguished according to their place of growth, as *Cassia fistula orientalis* and *Cassia fistula occidentalis*.—See Hill's *History of the Materia Medica*, London, 1751. By some writers, as Pomet, two varieties of *Cassia fistula orientalis* are noticed, namely, *Cassia fistula* of the Levant, and *Cassia fistula* of Egypt.

2. *Cassia Brasiliana*, Lam. This produces the horse cassia of Jamaica. It is not used in Europe.

The dried leaves of *Cassia Marylandica*, Linn., a plant of the United States, are there employed as senna, but we are not aware that the pods of this plant are used in medicine.]—*Lon. Pharm. Jour.* November 1, 1851.

ESSENCE OF JARGONELLE PEAR.

BY THE EDITOR OF THE PHARMACEUTICAL JOURNAL.

The liquid sold under this name, and which has been for some time in use by confectioners, is the *acetate of the oxide of amyle.*

It is prepared with great facility by submitting to distillation a mixture of one part of amylic alcohol (better known by the name of oil of grain,) two parts of acetate of potash, and one part of oil of vitriol. The distilled liquid is to be washed with alkaline water, dehydrated by chloride of calcium, and afterwards rectified by distillation from protoxide of lead.

Its properties are thus stated by Dumas :—In the state of purity it is a colorless, very limpid, volatile liquor, which boils at 257° F. It possesses an ethereal aromatic odor, somewhat resembling acetic ether ; its sp. gr. is less than that of water. It is insoluble in water, but soluble in alcohol, ether, oil of grain, &c. Concentrated sul-

phuric acid does not color it in the cold; but by heating the mixture it becomes reddish-yellow, and when the temperature is elevated, destructive reaction takes place, the mixture blackens and evolves sulphurous acid. Placed in contact with a watery solution of potash it is very slowly altered; but an alcoholic solution of this base rapidly decomposes, an alkaline acetate is formed, and the oil of grain regenerated.

Its ultimate composition is

14 equivalents of carbon,	.	.	84
14 " " hydrogen,	.	.	14
4 " " oxygen,	.	.	32
			130

But its proximate composition is amyle, (an hypothetical radical*) oxygen, and acetic acid.

1 equivalent amyle (C_{10} H_{11})	.	.	71
1 " oxygen,	.	.	8
1 " acetic acid, (C_4 H_3 O_3)	.	.	51
			130

Its formula is thus stated by Brande, AylO, AcO_3; by Fownes AylO, C_4 H_3 O_3.

Amylic alcohol, or *oil of grain*, called by the Germans *fuselol*, is the hydrated oxide of amyle, AylO, HO. It is largely produced in the distillation of spirit from corn. It is officinal in the Dublin Pharmacopœia, where it is termed "*Alcohol amylicum—Fusel oil*," and is employed to yield valerianic acid in the process for making "Sodæ Valerianas."

From information which we have received, we have reason to believe that the use, by very young children, of articles of confectionary, flavored with essence of pear, is not without danger. A child on two occasions became partially comatose, with livid lips and feeble pulse, after eating some confectionary which it was calculated contained about one drop of the essence.—*Ibid.*

* This radical has been isolated by Frankland, by decomposing iodide of amyle with an amalgam of zinc. (*Fownes' Chem. 3d edition*, 1850, *page* 379. —Ed. Am. Journ. Pharm.

ON THE SOURCES OF AMYGDALINE.

By Wilh. Wicke.

Amygdaline appears to be more general and of a greater botanico-physiological importance than has hitherto been supposed; and the following experiments show, that it is almost a general constituent of the Pomaceæ. Its presence has been proved by submitting parts of the various plants with water to distillation, and testing the distillate with a salt of iron for prussic acid, under the conviction that no other vegetable matter but amygdaline possesses the property of generating, under these circumstances, prussic acid. The experiments were performed in the month of May, in the laboratory at Göttingen.

1. POMACEÆ.

Pyrus Malus.—The distillate of the green leaves of the bark and of the flower-buds contained no prussic acid.

Sorbus Aucuparia.—The young shoots and the unfolded leaves yielded a strong hydrocyanic distillate; as did also the leaf-pinnæ, the petioles, and especially the bark. On the other hand, the distillate of the flower buds, which had been broken off short from the penduncles, showed no hydrocyanic reaction.

Sorbus hybrida.—Hydrocyanic acid is contained in the bark, and still more abundantly in the young shoots of this tree, which grows wild in the south of Sweden, and occurs singly in Thuringia. The reaction was not so strong in the distillate of the leaflets and of the petioles, whilst that of the developed flowers became at first bluish, and only after a few days flocculi of Prussian blue were deposited.

Sorbus torminalis.—The distillate of the already far advanced shoots, divested of the leaves, smelt strong of prussic acid, and yielded immediately a proportionately abundant precipitate of Prussian blue. A large quantity of leaves yielded a distillate, which became only bluish on being tested. The distillate of the flowers smelt of prussic acid, and corresponded nearly with that of the shoots. The distillate of the bark and flower-stalks resembles that of the leaves.

Amalanchier vulgaris.—The bark, taken from the preceding year's branches, contained a very large proportion of prussic acid.

The leaves also yielded a hydrocyanic distillate; and although the proportion of prussic acid was but inconsiderable when compared with the quantity of leaves employed, still it was larger than in Pyrus torminalis. The distillates of the young fruits, stalks, and young shoots immediately showed the presence of prussic acid.

Cotoneaster vulgaris.—The distillate of the short shoots showed but a very slight hydrocyanic reaction, and the precipitate of Prussian blue separated only after a few days; in that of the bark, of the flowers deprived of their stalks and of the leaves, no hydrocyanic reaction took place.

Cratægus Oxycantha.—Only at the commencement of their vegetation, the distillate of the shoots, about one inch in length, yielded immediately a precipitate of Prussian blue; still the proportion of prussic acid was very insignificant, and at a more advanced stage of vegetation, in no part of the plant could prussic acid be detected.

II. AMYGDALEÆ.

Prunus domestica.—Similar to Cratægus. The very young shoots yielded prussic acid, but neither the developed leaves nor the bark. The more advanced shoots showed in the distillate traces only of prussic acid.

Prunus Cerasus.—The bark of the root and of the branches, the leaves and the young shoots, contained no prussic acid. Nor could any be detected in the distillate of the ovary.

Prunus Mahaleb.—No prussic acid could be discovered in the leaves, in the bark, in the very young and slightly developed shoots and in the flower-racemes, although all these parts were repeatedly examined.

Prunus Padus.—This tree, as is well known, contains amygdaline in all its parts. By distilling the leaves, considerable drops of bitter almond-oil were obtained, and on testing the distillate for prussic acid, an abundant precipitate of Prussian blue was obtained.

These experiments show that amygdaline is very general among the Pomaceæ, and that in many it is continually generated during the process of their development. With the various sorts of Prunus this appears to be otherwise. In the very young organs of

the cherry and plum-trees no amygdaline could be traced, whilst in the kernels of the fruit of these trees it is contained in considerable quantities. There appears to exist here a similar relation to that which is found in Cratægus and Cotoneaster, where, when the young shoots begin to be developed, prussic acid is found in the distillate, whilst the other organs and the shoots at a more advanced period yield no hydrocyanic distillate.

That amygdaline has an active share in assisting the process of development appears also to be indicated by the fact that it is found in the largest proportion in the young shoots even of those plants, which contain it in all their organs, such as *Sorbus torminalis* and *Amalanchier vulgaris.—London Phar. Journal, October* 1, 1851, *from Annalen d. Chemie und Pharmacie.*

ON THE TESTS FOR DETERMINING THE VALUE OF CINCHONA BARKS.

By Dr. A. Buchner.

The author draws the attention of druggists to the importance of ascertaining the amount of alkaloids in the barks, and the preference which this method deserves, to all others which are founded upon external characters. He calls attention to the method of examination proposed by Wöhler, and finds it to answer its purpose completely when the requisite time can be given to it. The author has made numerous experiments with a view to discover a process which shall require far less time. This process, the value of which was tested upon several Cinchona barks, gave the following results:

Cortex Cinchonæ Regius [Calisaya.]—3 oz. of this bark, which exhibited all the characters of being genuine, were exhausted with 8 oz. water to which 1 scruple of officinal dilute sulphuric acid had been added, the mixture kept for 24 hours at a temperature of 122° to 140°F., frequently agitated, and then brought upon a filter. The filtered liquid was perfectly clear, of a very pale yellow color, and possessed an agreeable aromatic odor and an acid bitter taste. The residual powder was digested twice more from twenty

to twenty-four hours at the same temperature with 8 to 9 oz. of water and a few drops of dilute sulphuric acid until the last filtrate was rendered but faintly turbid by ammonia. The whole of the extracts were united, and the alkaloid precipitated until a filtered sample was no longer rendered turbid by ammonia. The precipitated quinine was collected upon a filter, washed, pressed, and dried. In the moist state it had a chocolate-brown color; when dry, it was dark reddish brown, and weighed 21 grs. There were therefore 2·187 per cent. of colored quinine; the time requisite for this process may be further shortened by boiling, instead of digesting at the above mentioned temperature. 1 oz. of the powdered bark was boiled half an hour with 12 oz. of water and ½ a scruple of dilute sulphuric acid, and the residual powder washed out with about 4 oz. more hot water, and the filtered solution immediately precipitated with ammonia or carbonate of soda. The precipitate is washed with cold water, and dried between blotting paper.

The author purified this colored quinine. This operation, however, was accompanied by so great a loss, that, calculating the quantity in the bark from the quantity of pure quinine obtained, it would amount only to ½ per cent. For the purpose of testing a bark as to its genuineness, it suffices merely to prepare the colored quinine, and this method is then both quick and simple.

This method was applicable to the examination of the barks of *Cinchona fusca*, *C. Huamalies*, *C. flava*, and *C. Surinamensis*. *C. Brasiliensis*. The test is easily applied and decisive when the question to decide is whether the powder has been prepared from *C. regia*, *C. fusca*, or *C. flava*, or from any false Cinchona barks. Yellow bark, exhausted with hot water to which a little sulphuric acid has been added, furnishes a pale yellow infusion of a peculiar aromatic odor, which, on being mixed with an excess of ammonia, gives a copious reddish-brown precipitate, and the liquid at the same time assumes a beautiful red color; red bark, on the other hand, furnishes a brownish-yellow or ochreous precipitate, and the infusion is colored yellowish-brown by the ammonia. The pale Carthagena bark likewise yields with water acidulated with sulphuric acid a pale sherry-colored infusion, which also gives a chocolate-brown precipitate with ammonia, like the infusion of yellow bark; but the filtered ammoniacal liquid is not red, but

of a darker yellow. Huamalies bark, exhausted in the same manner, furnishes a dark yellow infusion of a less aromatic odor than the yellow bark, and with ammonia an ochreous precipitate like the brown Huanuko bark; but the filtered ammonical liquid is not yellowish-brown, but red, almost like the infusion of *C. regia*. The false barks furnish with pure water and with water to which a little sulphuric acid has been added, much darker-colored infusions than the genuine barks; they possess a more astringent taste, and furnish no alkaloid when mixed with ammonia until they have an alkaline reaction.

If it be desired to ascertain the amount of alkaloid more accurately than is possible according to the above method, the acid extracts must be concentrated as much as possible by evaporation; moreover, the alkaline liquids filtered from the precipitated alkaloids should be evaporated to dryness in order to remove from them the remainder of the quinine or cinchotine.

The alkaloids precipitated from the acid infusions of the barks by ammonia or carbonate of soda are, in every case, combinations of them with a humus-like cinchona coloring substance, which in the *C. regia* is a different one from that contained in the brown kinds of bark, and is present in variable quantity. This coloring matter may be very easily separated from the alkaloid by acetate of lead.

It may be assumed that 1 oz. of yellow bark, exhausted with 12 oz. of water and from ½ to 1 scruple of dilute sulphuric acid, will furnish, on precipitation by ammonia, not less than 10 grs. or 2 per cent. of the weight of the bark of colored quinine.

The brown or Huanuko bark gives, on being treated in the same manner, only from 8 to 9 grs. of colored alkaloid, and frequently less. Besides cinchonine, it contains another alkaloid, which is soluble both in ether and in water containing soda, and which is not quinine, but most probably cinchotine.

1 oz. of the Huamalies, or rusty bark, furnished 7·5 grs., or 1·54 per cent. of colored alkaloid; it is therefore one of the richer kinds, and most probably more active. However, no quinine could be detected in it; for the portion which was pretty soluble in water and ether, on being dissolved in chlorine-water, was not rendered green by ammonia; it may therefore be assumed as highly probable, that the Huamalies, like the Huanuko bark, contains cinchotine besides cinchonine.

Of the pale bark, *Cinchona flava*, [Carthagena] 1 oz. furnished 6·35 grs. of colored alkaloid, or 1·32 per cent.; but it differs very remarkably from the *C. regia*, not only by its external characters, but also from its containing no quinine; the alkaloid in this kind appears to consists for the greater part of cinchotine. From the large amount of alkaloid contained in it, it is probable that the *C. flava*, though not to be compared with *C. regia*, should be counted among the most active of the barks.

The spurious barks, both the *Surinamensis* and the *Brasiliensis*, are easily distinguished from the genuine by their external characters as well as by the fact that they furnish with acidulated water reddish-brown or brownish red, and not pale yellow infusions, from which no alkaloid is precipitated by ammonia or carbonate of soda; they consequently possess no greater pharmacological value than the barks of our willows, ash and horse-chestnut.—*London Chem. Gaz. from Buchner's Repert.*

MONOPOLY OF YELLOW OR CALISAYA BARK.

[Through the kindness of some friends we have been favored with a copy of the *Report of the Secretary of the Treasury of Bolivia to the National Bank of Bark*, and also with a copy of the *Decree of the Government of Bolivia*, prohibiting bark cutting in the Bolivian forests for three years. The results of these monopolies, by raising the price of Calisaya bark, has been to force the manufacturers of quinine to resort to the inferior but cheaper quinine-yielding barks of Carabeya, Bolivia, and New Grenada.—Ed. Lon. Pharm. Journ.]

Report of the Secretary of the Treasury of Bolivia to the National Congress, regarding the National Bank of Bark.

It is highly satisfactory to me to announce to Congress the establishment of the National Bank of Bark, which has been accomplished in the city of La Paz, by means of the authentic contract entered into between the Government and Messrs. Aramayo Brothers, under the conditions and bases of their proposal and those contained in the supreme resolutions of the 17th and 26th January, 1850. The constant desire of the nation expressed in the solemn legislative acts since the year 1839, had been for an

establishment of this nature, composed of native shareholders, and with sufficient funds to give regularity to the bark trade; purchasing it in the interior of the country at a fixed price, advantageous to the cutters of the country, and selling it abroad at the value due to an article of exclusive production in the woods of Bolivia, and of the first necessity and great demand in the trade of the world.

The free export of bark would be fatal to our commerce, for undoubtedly, a supply greater than the demand would force down the price, subjecting its value to strange vicissitudes and irregularities. A monopoly of four persons, like the extinct one of Pinto and Co., even if it could force up the price to a high point abroad, would neither satisfy the exigencies nor consult the interests of the national industry. Four lucky contractors would thus have used for their exclusive benefit a spring of wealth that should flow abundantly for all the sons of our soil.

The present bank, avoiding both extremes, is that mid-term of justice and general and individual commerce, that common centre which conciliates and cements the interests of the national industry, public wealth, and the governmental treasury.

Consequently the bank maintains the monopoly, and with it the high value and price of bark. Its shareholders, at present eighty in number, are all Bolivians, which is significant of the fact, that in the bank there has been a concentration of capital, the benefits of which will be distributed among numerous Bolivian families. The bank purchases the bark according to its different qualities at the prices of sixty, thirty-five, and thirty dollars per quintal. This produces an immense good to the Bolivian cutters and laborers, who formerly never saw the price of the best bark exceed eighteen or twenty-two dollars a quintal. Finally, the national Treasury receives for duties twenty-five to fourteen dollars a quintal; which, on seven thousand quintals that the bank has the privilege of exporting annually, amount to $142,000, which are paid into the custom-house of La Paz in advance in monthly sums of $11,833.2 reals. Such are the advantages that have been realized, and so great the interest promoted at the same time. It is true, that among the shareholders there are some privileges in the number of their shares, but these are the contracting directors of the bank, those who manage a business so vast and of so great responsibilities, those who guarantee to the Treasury its duties, and to their

fellow-shareholders the results of their management, and who must supply, in case of a deficiency of the associated capital, the necessary funds for the progress of the undertaking. The government was convinced by its own experience, when endeavoring to establish the bank on the basis of the decree of the 18th of June, 1849, that it was difficult, if not impossible, to accomplish it with partners admitted with an equal number of shares. The difficulty of their all granting their confidence to the same parties to direct the establishment; the large remuneration that these parties would then ask for managing and directing the undertaking in which, on the other hand, they would risk little or nothing; the well-grounded apprehension that with the associated capital of but $250,000, they could not meet the necessities and emergencies of a business having to contend with great difficulties in the interior of the Republic, and especially abroad, where still existed accumulated a considerable balance of the bark exported by Pinto and Co., and of that which was so steadily exported during the last period of free egress; the very slowness with which the directing "Junta," named since August of last year, had proceeded in the convocation of shareholders and other operations belonging to its functions, since it had not even installed itself until the arrival of the Government in La Paz towards the end of last November, a slowness which caused a presumption of great delay when the attempt should be made to organize and put the bank in movement; all these difficulties, all these fears and motives were the inducement, apart from the intrinsic merit of the proposal of Messrs. Aramayo Brothers, for the Government to come forward itself at once in this serious affair, and adopt a plan that under the circumstances was certainly the least evil, if not the very best. Accordingly all the citizens being invited to submit their proposals upon the solemn opening of these in a Counsel of the Ministers, and in the presence of a large meeting of the most respectable citizens of La Paz, the unanimous opinion of the Government, the directing "Junta," and the bystanders, decided that of Messrs. Aramayo and Co., to be the most advantageous. The Government, impartial and provident in the management of the gravest national interests of which it is not owner, but administrator, accepted it with certain modifications, which were in their turn accepted by the parties proposing.

Then, Sir, was it that the present National Bank of Bark was installed.

The circular of January 28th, 1850, ordered the convocation of shareholders in all the departments of the Republic, and determined the distribution among them of 500 shares. The present number of shareholders is 80, without including the contracting directors of the enterprise; the former hold 293 shares and the latter 207. It is to be observed, that according to the contract, the directors originally were to have taken but 100 shares, and those which should remain untaken at the end of the term of the convocation, which have amounted to 107. Each share is of $500; the enterprise consists of 500 shares, and the capital stock is $250,000.

The Government entertains flattering hopes of the progress and advance of this establishment. It has but one foe—smuggling. The Government is striving and will strive to repress and chastise this with all the means of action conferred upon it by its authority, and imposed upon it by good faith to its engagements to the shareholders and the entire nation. Of the $142,000 which annually enter into the custom-house at La Paz for bark duties $20,000 have been applied by a decree of the 28th of January, 1850, to the work upon the cathedral of La Paz. It was to be deplored that the construction of so grand a monument of the piety and civilization of that wealthy people should be paralysed by the scarcity of its funds, consequent on the continuance of the treaty with Peru, which has made unavailing the intentions of the law of 11th October, 1844.

The rich fiscal ingress of bark is until now wholly due to the department of La Paz, and it was just that the Treasury should remit a small part of its duties in favor of the first work of that department. The necessity of having the custom-house operations in baling, weighing, and examining the quality of the bark destined for export, verified with the care and minuteness needed to avoid frauds prejudicial to morality and the public purse, has induced the Government to create the office of "Bark Inspector." Its salary is at present fixed at $1,200 per annum, and it has been conferred upon an individual who has merited the three-fold confidence of the Prefect, Municipal Council, and the Directors of the Bank.

August 6th, 1850.

[The following document, forwarded to us after the above report was in type, appears to be alluded to in the report.—Ed. Lon. Pharm. Journ.]

Articles 1 *to* 9 *of the Decree of the Bolivian Government as regards Bark.*

Art. 1. Four months after this a National Company will be established for getting and exclusively exporting bark to foreign places, in conformity with the law, 14th Nov., 1834.

Art. 2. The company to be composed of such individuals as shall join it as bidders, who must be Bolivians or foreigners intermarried with Bolivians, and persons domiciliated in the Republic.

Art. 3. The funds of the society to amount to 500 per pesos, divided into 500 shares of 1000 pesos each. No one to have more than five shares.

Art. 4. The Bank only, in the name of the society, can give permission to buy or export the bark got from the mountains of the Republic, with the absolute prohibition to any other individual society or corporation on pain of confiscation, for term of ten years, which may be lengthened as often as necessary, according to the result of the enterprise.

Art. 5. The Society of Bank of Exchange can neither buy nor export during the first two years more than 3000 quintals, in order to wait till the accumulation of the European markets is reduced; 4000 in the third year, and 5000 in the fourth and subsequent ones.

Art. 6. Amongst the quantities named in the foregoing article for the exportation of the Calisaya bark of first quality, may be comprised in the first two years 600 quintals of the Charquisillo and Canuto, and 1000 in the subsequent ones.

Art. 7. For the collection of funds mentioned in Article 3, a directing junta of four individuals is to be formed, who are to be named by Government and presided over by the prefect, with the object to convoke the shareholders, and to submit the propositions and subscriptions of those who wish to belong to the Society of the Bank of Exchange or Exportation.

Art. 8. Two months after the enterprise is announced by the directing junta, and whenever it has got together a number of shares, which for the formation of the bank it shall deem sufficient, the

shareholders entered into the society will be convoked. If by a majority of votes it is resolved to establish the same, giving security for its responsibility, it will be considered installed. From its beginning the society will admit or receive in the two following months the subscriptions which come in until their number is complete. If after the lapse of this time the number should not be complete, the shareholders may form a bank of themselves, taking upon themselves the responsibility of beginning anew their undertaking. No share will be admitted the term of the four said months once expired.

ART. 9. The Bank or National Society shall pay to the principal factors of Paz thirty pesos to the merchants and workers of the mountains for every quintal of Calisaya bark of first quality, twenty for Charquisillo, seventeen for Canuto of the green Calisaya, and $30 duty on Calisaya, $16 on others.

Copy of the Decree of The Bolivian Government.

Considering,

1st. That the number of bark-cutters has caused such an accumulation of bark in La Paz, that the National Bank has not been able to export or buy it at once without exceeding its annual amount, so far as to have actually in deposit the quantity corresponding to the second year, and even a part of the third.

2d. That it is the duty of the Government to protect the bark forests, menaced by imprudent and excessive cuttings.

3d. That the Government, regardful of its contracts, cannot view with indifference the immoderate cutting of bark, which lowers its value, compromising at the same time the interests of the public, of the Bank, and of the Treasury.

Decree.

ART. 1. The cutting of the bark is prohibited throughout the Republic from January 1, 1851, for the three succeeding years.

ART. 2. Bark already cut, or which may be cut up to December 31, 1850, shall be taken to the custom-house at La Paz, by the 1st of March, 1851.

ART. 3. Bark cut after January 1st, 1851, or which may be found on the road, or in any other place, after March 1st, is confiscable by the authorities, by any individual or public officer, who

may take possession of it by the mere act of apprehension, having afterwards to sell it to the National Bank at the stipulated prices.

Lon. Pharm. Jour. Nov. 1851.

Sucre, Oct. 29, 1850.

EXAMINATION OF AN ORE OF CINNABAR, FROM NEW ALMADEN, CALIFORNIA.

By Adam Bealey, Esq., M. A.

[Extracted from a paper in the Pharmaceutical Journal for November, 1851, taken from the *Annual Report* of Liebig and Kopp.—Ed.]

This ore has long been known to mineralogists as abundant and very accessible, but it had not attracted much notice until the recent development of the mineral wealth of California led to more extended inquiry into the actual extent of its distribution, and rendered improved methods of reducing it of great interest and value.

The mine or principal deposit of this mineral, is thus described by Lyman in 1848:

"New Almaden lies between San Francisco and Monterey, near the coast. It is 1200 feet above the plain, and is situated upon a ridge of the Sierra Azul, which consists of a greenish talc-rock.

"The cinnabar is found in nests, in a stratum of a yellowish earth, which is 42 feet in thickness. The occurrence of this mineral has been known to the natives from time immemorial, as the cave of red earth, which they employed for painting their bodies.

"During Lyman's stay, the daily produce from 1,600 lbs. of cinnabar, distilled in a rudely constructed apparatus, was from 200 to 300 lbs. of mercury, and in the last three weeks of his residence the total amount of mercury obtained was about 10,000 lbs.

"Cinnabar had likewise been found in fifteen or twenty other places, within a circumference of a few miles."

A more recent account of this mine was politely communicated by Dr. Forbes, and accompanied a specimen of the ore sent to Pro-

fessor Hofman for analysis, at whose suggestion the following examination was undertaken :—

"The mine of New Almaden is situated in Upper California, near Santa Clara, on the coast, not far from San Francisco. It is the property of a company of English and foreign merchants, and is leased to a company of the same kind.

It has been in active operation for about six or eight months. The vein is very large, and 'crops out' on the surface, where it is worked. The metal is extracted from the ore in two ways :

"First, by a series of large iron cylinder-retorts, heated in furnaces, and discharging their produce into water, where the metal is condensed.

"Secondly, by brick furnaces, in which the fuel (wood) is intermixed with the ore. By these operations, he ore gives from 30 to 45 per cent. of its weight of mercury.

"The mine produced in the month of November, 1850, not less than 127,500 lbs. of mercury.

The ore as exhibited in the specimens sent, some of which weighed as much as 14 avoirdupois lbs. has a bright red color, slightly inclining to purple, and appears to have been imperfectly cleared from a soft, light-brown earth, which can easily be scraped from its surface. It breaks without much difficulty under the hammer, and is afterwards easily reduced to powder, with the exception of some bright crystalline particles, which are extremely hard.

The surfaces of recently broken ore appear much more purple than those long exposed. It is traversed at irregular intervals by very thin bands of white, hard crystalline material, apparently calcareous and siliceous. When in the state of fine powder it has a very brilliant vermilion color, many shades darker than the massive ore. Its sp. gr. is 4.410.

In a preliminary examination, it exhibited the ordinary phenomena of a mercurial sulphide associated with siliceous matter. A portion of the ore was digested with nitro-hydrochloric acid, and the insoluble residue separated by filtration.

The solution examined by the usual methods contained mercury, sulphur, iron, alumina, a trace of nickel, lime, and magnesia.

The part insoluble in acid consisted of silicic acid, and very minute traces of lime and potassa.

In estimating the principal constituents of this ore, the mercury was determined as sulphide of mercury, and as metallic mercury by distillation with lime.

Composition of various Cinnabar Ores.

	Californian.				Almaden, Spain.			Moschellandsberg.			Wolfstein
	1.	2.	3.	Mean	1.	2.	Mean.	1.	2.	Mean	
Mercury,	69.36	70.13	70.23	69.90	37.84	37.75	37.79	66.60	67.13	66.86	18.00
Sulphur,	11.38	11.21	—	11.29	16.22	—	16.22	11.01	--	11.49	
Iron,	1.23	—	—	1.23	10.36	--	10.36	Insol. residue 17.09	—	17.09	73.31
Lime,	1.40	—	—	1.40							
Alumina,	0.61	—	—	0.61							
Magnesia,	0.49	—	—	0.49							
Silicic acid,	14.30	14.52		14.41	Silicic acid and alumina,		35.12				
				99.33			99 49				

From these numbers it is evident that, provided the specimens represent the average minerals worked, the ore of Calfornia contains nearly double the amount of mercury found in the Almaden ore, and nearly fourfold that of the specimen of Wolfstein, while it approaches the composition of pure cinnabar, even more nearly than the mineral of Moschellandsberg.

CULTIVATION OF NUTMEGS AND CLOVES IN BENCOOLEN.*

By Dr. Lumsdaine.

The mode of culture adopted in the different nutmeg plantations is nearly the same. The beds of the trees are kept free from grass and noxious weeds by the hoe, and the plough is occasionally run along the adjacent spaces for the purpose of eradicating the Lallang (Andropogon caricosum) which proves greatly obstructive to the operations of agriculture. The trees are generally manured with cow dung and burnt earth once a year in the rainy season, but the preparation of suitable composts and their mode of application are but imperfectly understood. The pruning knife is too sparingly used; very few of the planters lop off the lower

* From a Paper in the Proceedings of the Agricultural Society established in Sumatra in 1820; cited from the Journ. of the Indian Archipelago and Eastern Asia, v. p. 78, Jan., 1851.

verticels of the nutmeg trees or thin them of the unproductive and straggling branches.

The site of a plantation is an object of primary importance, and doubtless the alluvial grounds are entitled to preference from the acknowledged fertility of their soil, and its appropriate organization and capability of retaining moisture, independent of the advantage of water carriage. Several of the nutmeg trees of the importation of 1798 at Moco Moco, are placed in soil of this description; although never manured they are in the highest state of luxuriance and bear abundantly; and I have been informed by a gentleman recently arrived from that station, that the stem of one of them measures 38 inches in circumference. Some of the trees in my own experimental garden, corroborate the truth of this assertion; one of these blossomed at the early age of two years ten months and a half, a degree of precocity ascribable solely to its proximity to the lake which forms the southern boundary. This was the first tree that blossomed of the importation of 1803, which consisted of upwards of 22,000 nutmeg plants. Next to the alluvial deposits, virgin forest lands claim pre-eminence, their surface being clothed with a dark colored carbonized mould, formed by the slow decay of falling leaves and mouldering trunks of trees; and next to these are to be ranked the open plains. Declivities are objectionable from the risk of the precipitation of the mould and manure into the subjacent ravines, by the heavy torrents of rain that occasionally deluge the country. Above all, the plantation must be protected from the southerly and northerly winds by a skirting of lofty trees, and if nature has not already made this provision, no time should be lost in belting the ground with a double row of the Cassuarina littorea and Cerbera manghas, which are well adapted for this purpose. This precautionary measure will not only secure the planter against eventual loss from the falling off of the blossom and young fruit in heavy gales, but will prevent the up-rooting of the trees, a contingency to which they are liable from the slender hold their roots have in the soil. If the plantation is extensive, subsidary rows of these trees may be planted at convenient distances. No large trees whatever should be suffered to grow among the spice trees, for these exclude the vivifying rays of the sun and arrest the descent of the salutary night dews, both of which are essential to the quality and the quantity of the

produce. They further rob the soil of its fecundity, and intermingle their roots with those of the spice trees. It is true that by the protection they afford they prevent frequently the premature bursting of the husk, occasioned by the sudden action of a hot sun upon it when saturated with rain; but the loss sustained in this way is not equal to the damage the spice trees suffer from these intruders. Extensive tracts of land are to be met with in the interior of the country, well adapted for the cultivation of the nutmegs and cloves, and to these undoubted preference is due.

In originating a nutmeg plantation, the first care of the cultivator is to select ripe nuts, and to set them at the distance of a foot apart in a rich soil, merely covering them very lightly with mould. They are to be protected from the heat of the sun, occasionally weeded, and watered in dry weather every other day. The seedlings may be expected to appear in from 30 to 60 days, and when four feet high, the healthiest and most luxuriant, consisting of three or four verticels, are to be removed, in the commencement of the rains, to the plantation, previously cleared of trees and under wood by burning and grubbing up their roots, and placed in holes dug for their reception, at the distance of eighty feet from each other, screening them from the heat of the sun and violence of the winds. It is a matter of essential importance that the ground be well opened and its cohesion broken, in order to admit of the free expansion of the roots of the tender plants, and that it be intimately mixed with earth and cow manure, in the proportion of two-thirds of the former to one-third of the latter. The plants are to be set in rows as well for the sake of regularity as for the more convenient traversing of the plough, which is now to be employed in clearing the intermediate spaces of lallang and other noxious grasses, carefully avoiding to trespass on the beds of the trees. They must be watered every other day in sultry weather, manured annually during the rains with four garden baskets full of the above mentioned compost to each tree, and protected from the sun until they attain the age of five years. They will now be sufficiently hardy to bear the sun, and from that age until their fifteenth year, the compost should consist of equal parts of cow dung and burnt earth, and from eight to twelve baskets full will be required for each bearing tree, a lesser proportion being distributed to the males. From the power of habit the trees will, after the fifteenth

year, require a more stimulating nutriment; the dung ought not, therefore, to be more than two or three months old, and the mixture should consist of two parts of it to one of burnt earth, of which the suitable proportion will be from twelve to sixteen baskets to each tree biennially. In all cases the prepared compost must be spread out in the sun for three or four days previous to its application, in order to destroy grubs and worms that may have lodged in it, and which might injure the roots of the plants.

In all plantations, whether situated in forest land or in the plains, the necessity of manuring at stated intervals has been found indispensable, and is indeed identified with their prosperity. The proper mode of applying it is in a circular furrow in immediate contact with the extremities of the fibrous roots, which may be called the absorbents of the plant. Where there is a scarcity of dung, recourse may be had to the dregs remaining after the preparation of the oil from the fruit of the Arachis Hypogæa, which, in mixture with burnt earth, is a very stimulating manure; or composts may be formed from the decomposition of leaves or vegetable matter of any description. A very fertilizing and highly animalized liquid nutriment for plants, is obtained by macerating human ordure in water in proper pits for four or five months, and applying the fluid to the radical absorbents of the plants. Seaweed and many other articles may also be resorted to, which will readily occur to the intelligent agriculturist.

During the progressive growth of the plantation, the beds of the trees are to be regularly weeded and the roots kept properly covered with the mould, for these have a constant tendency to seek the surface; the growth of the lateral branches alone is to be encouraged, and all suckers, or dead or unproductive branches, are to be removed by the pruning knife, so as to thin the trees considerably and to admit of the descent of the night dews, which are greatly contributive to their well being, especially during the dry and sultry weather; creepers are to be dislodged, and the lower verticels lopped off, with the view of establishing an unimpeded circulation of air. The conclusion of the great annual harvest is the fittest time for pruning the trees. After the eradication of the lallang, the growth of innoxious grasses is to be encouraged in the intervals between the trees, which will give the plantation the appearance of a park, and the plough is now to be abandoned.

The nutmeg tree is monœcious as well as diœcious, but no means of discovering the sexes before the period of inflorescence are yet known. The relative proportion of male and female trees to each other is also undefined, and is indeed the result of chance. Setting aside, however, all pretension to mathematical precision, the number of productive trees may be roundly estimated at two-thirds of the whole cultivation. As the monœcious plants are productive, the number of male trees necessary to be retained will depend entirely on that of the monœcious kind; all above this number, being considered superfluous, should be cut down and other trees planted in their stead. Were I indeed to originate a nutmeg plantation now, I should either attempt to procure grafts on male stocks on such trees as produce the largest and best fruit, by the process of inarching, notwithstanding the speculative hypothesis of the graft partaking of the gradual and progressive decay of the parent tree, leaving a branch or two of the stock for the purpose of establishing a regular polygamy, by which means the plantation would consist of monœcious trees only; or I should place the young plants in the nursery at the distance of four feet from each other, and force them to an early discovery of their sex, by lifting them out of their beds once a year and replacing them in the same spot, so as to check the growth of wood and viviparous branches. The sex might thus be ascertained on an average within the fourth year, and the trees removed to the plantation and systematically arranged, whereas in the usual mode of proceeding it is not ascertainable in general before the seventh year.

Upon an average, the nutmeg tree fruits at the age of seven years, and increases in produce till the fifteenth year, when it is at its greatest productiveness. It is said to continue prolific for seventy or eighty years in the Moluccas, but our experience carries us no farther than twenty-two and a half years, all the trees of which age that have been properly managed, are still in the highest degree of vigor and fecundity; and for this reason no term for planting a succession of trees can as yet be fixed upon. Seven months in general elapse between the appearance of the blossom and ripening of the fruit, and the produce of one bearing tree with another under good cultivation may, in the fifteenth year of the plantation, be calculated at five pounds of nutmegs, and a pound

and a quarter of mace. I have observed, however, that some trees produce every year a great quantity of fruit, whilst others constantly give very little. It bears all the year round, but more plentifully in some months than in others. The great harvest may generally be looked for in the months of September, October, November and December, and a small one in April, May and June. Like other fruit trees on this portion of Sumatra, I have remarked that it yields most abundantly ever other year. The fruit having ripened, the outer integument bursts spontaneously, and is gathered by means of a hook attached to a long stick, and the mace being cautiously stripped off and flattened by the hands in single layers, is placed on mats for three or four days in the sun to dry. Some planters cut off the heels and dry the mace in double blades, from an opinion that the insect is apt to breed in or about the heels, and that the double blades give a better and more substantial appearance to the mace. The former idea is entirely groundless, for if the article be properly cured, kept in tight packages in a dry situation, and exposed to the sun for five or six hours once a fortnight, there need be no apprehension of the insect; and if it is not, it will assuredly be attacked by it whether the heels be cut off or not; again, the insect is much more likely to nestle within the fold of the double blade, and the fancied superiority of appearance has so little weight with the purchaser, as not to counterbalance the risk of probable deterioration and eventual loss. In damp and rainy weather the mace should be dried by the heat of a charcoal fire, carefully conducted so as not to smoke it or blacken its surface.

The nuts liberated from their macy envelope are transported to the drying house, and deposited on the elevated stage of split neebongs, placed at a sufficient distance from each other to admit of the heat from a smouldering fire beneath. without suffering even the smallest nuts to pass through. The heat should not exceed 140° of Fahrenheit, for a sudden inordinate degree of heat dries up the kernels of the nuts too rapidly, and its continued application produces fissures in them, or a fermentation is excited in them which increases their volume so greatly as to fill up the whole cavity of the shell, and to prevent them from rattling when put to this criterion of due preparation. The fire is lighted in the night. The smoking house is a brick buiding of a suitable size, with a

terraced roof, and the stage is placed at an elevation of ten feet from the ground, having three divisions in it for the produce of different months. The nuts must be turned ever second or third day that they may all partake equally of the heat, and such as have undergone the smoking process for the period of two complete months and rattle freely in the shell, are to be cracked with wooden mallets, the worm-eaten and shrivelled ones thrown out, and the good ones rubbed over simply with recently prepared well sifted dry lime. They are now to be regarbled, and finally packed for transportation in tight casks, the insides of which have been smoked, cleaned, and covered with a coating of fresh water and lime. If packed in chests, the seams must be dammered to prevent the admission of air or water. There is no necessity for sorting them, as previously to their sale they are classed into sizes in the Company's warehouses in London.

The mode generally practised in preparing nutmegs for the markets, is to dip them in a mixture of salt water and lime, and to spread them out on mats for four or five days in the shade to dry. I am, however, convinced from much experience that this is a pernicious practice, not only from the quantity of moisture imbibed in this process encouraging the breeding of insects and rendering the nuts liable to early decay, but from the heating quality of the mixture producing fissures and occasioning a great loss in the out turn; whereas by liming them simply in the dry way as I have recommended, the loss ought not to exceed 8 per cent. In May, 1816, I made some experiments on this subject. I cracked a quantity of nutmegs that had been smoke-dried for two months, and distributed them into four equal portions. I prepared the nuts of one parcel with a mixture of lime and salt water; those of the second were rubbed over merely with fine well dried shell lime such as the natives use with their betel, although I have no doubt but that recently prepared and well sifted common lime would answer equally well; those of the third parcel were mixed, unlimed, with one-third of their weight of whole black pepper; and those of the fourth, also unlimed, with the same proportion of cloves. They were then put into separate boxes with sliding tops, and numbered 1, 2, 3 and 4, in the order I have mentioned them. At the expiration of the first year they were all sound. After that of the second, I found three worm eaten nuts in No. 1. and two in No. 3,

but those in Nos. 2 and 4 remained untouched. The injured nuts were allowed to remain, and after the lapse of the third year, five worm eaten ones were discovered in No 1, three in No. 3, and two in No. 4, those in No. 2 being in their original state. Four years and four months have now elapsed since the commencement of these experiments, and upon examining the several parcels the other day, the number of decayed nuts has not increased in Nos. 1, 3 and 4, and those in No. 2 are as good as the day they were put into the box. These experiments not only prove the superiority of liming in the dry way, but also the fact that the progress to general decay in a heap of nutmegs, even after the insect has established itself, must be a work of years. In the shell they will keep for a great length of time. I have myself kept them in this state for six years, and when cracked they were found perfectly sound. From the report of the London brokers, however, they will not answer in Europe on account of the heavy allowance for shells, which is one-third of the weight; but the Chinese merchants are in the daily habit of exporting them to Pinang and China, where they are in request. It is stated on the best authority, that unlimed or brown nutmegs, as the home dealers call them, mixed with cloves as in experiment No. 4, are highly esteemed in England, and even preferred by some to the limed produce; most probably from the greater facility of detecting the flaws in them in their naked state.

Although the clove tree attains great perfection in the red mould of these districts, it is more partial to a less tenacious soil. Its cultivation has been established for many years in the West Indies and at Bourbon, and is of secondary importance only. The mother cloves are planted in rich mould at the distance of twelve inches from each other, screened from the sun and duly watered. They germinate within five weeks, and when four feet high are to be transplanted at intervals of thirty feet, with a small admixture of sand with the red mould so as to reduce its tenacity; and to be cultivated in the same mode as the nutmegs, only that when full grown they require less manure in the proportion of one-third. They yield generally at the age of six years, and at that of twelve are in their highest state of bearing, when the average produce may be estimated at six or seven pounds of marketable fruit each tree during the harvest, which takes place in the rainy months, but with us they have hitherto borne two crops in three years only.

The fruit is terminal, and when of a reddish hue is plucked by hand, so that the process of gathering is tedious. It is then dried for several days on mats in the sun, until it breaks easily between the fingers, and assumes a dark brown color. It loses about 60 per cent. in drying. When past its prime the clove tree has a ragged and uncombed appearance, and I am led to suppose that its existence is limited to twenty years, unless in very superior soil, in which it may drag out a protracted and unprofitable state of being to the period of perhaps twenty-four years. Hence it becomes necessary to plant a succession of seedlings when the old trees have attained eight years of age, and this octennial succession must be steadily kept in view.

With reference to the number of laborers, cattle and ploughs necessary for a plantation of 1000 nutmeg and clove trees, after the ground has been thoroughly cleared of underwood and stumps of trees, I consider that seven Chinese or active Bengalee laborers, fifty head of cattle and two ploughs, would be sufficient for all the purpose of the cultivation, with the exception of collecting the clove harvest, which, being a very tedious process, would require an extra number of hands; and indeed the best plan would be to gather it in by contract.—*American Journal of Science and Arts, November*, 1851.

ON THE ETHERIAL EXTRACT AND PROXIMATE CONSTITUENTS OF MALE-FERN ROOT.

By H. Bock.

The root was exhausted in a small displacement apparatus with ether, and the ether then distilled off. It had acquired scarcely any odor, had a neutral reaction, and did not become turbid on being mixed with water. The extract from 2000 grs. of the powdered root was of a grayish brown color, very thick, and had separated into two layers, the upper one of which was oily and of a green color, the lower one brownish and more resinous. On distillation with water, the product yielded a mere trace of essential oil to ether, and which resembled the oil above

described. The residue was digested with water containing ether, the ether separated by distillation and the water by filtration. The filtered liquid was turbid, had an astringent taste, and left on evaporation 6·5 grs. residue, which dissolved readily in water excepting a few brown flakes. The concentrated solution had a feeble acid reaction. Solution of isinglass and albumen produced copious precipitates, perchloride of iron and peracetate of iron gave grayish brown precipitates, and lime-water a reddish brown precipitate, which did not dissolve in an excess. Nitrate of silver caused a bulky flocculent precipitate, and perchloride of mercury a light green precipitate. Consequently what the water had removed from the etherial extract was a tannic acid, belonging to those which strike a green color with iron.

The etherial extract was now treated with alcohol of 0·840, first in the cold and then boiling. It acquired a reddish brown color, and left on evaporation 56·5 grs. of a reddish brown resin, transparent at the sides, and which on long exposure to the air became darker, harder and brittle. On being heated, it soon softened and became liquid; it had a somewhat aromatic odor and bitter taste; it dissolved readily in ether and spirits, and was heavier than water. On mixing the spirituous solution with water, it became turbid, had an acid reaction, and some time elapsed before the resin separated. The resin dissolved readily in oil of turpentine and likewise in ammonia. Nothing separated from the solution on the application of heat. It likewise dissolved in sulphuret of carbon; when heated with carbonate of potash, it dissolved in it, expelling the carbonic acid; it dissolved readily in caustic potash; the resin soap was very soluble in water, and was not separated by chloride of sodium even on ebullition. This resin consequently belongs to the strongly electro-negative hard resins of Unverdorben. In order to separate completely the resin from the fat oil, the residual ether extract was treated with alcohol of 0·780, and what was left on evaporation digested with alcohol of 0·840. The complete separation of the resin from the oil is difficult, and can only be accomplished by solution in ether and alcohol of various strength. In this manner 10 grs. more of resin were separated. The fatty oil which now remained, after treating with water and spirits, was thick, dark green, and easily soluble in ether. The ether solu-

tion was poured into a narrow-necked flask, and the ether allowed to evaporate slowly in the cold. After some time, a verrucoid, yellowish-white mass had separated on the sides of the vessel. The oil was decanted, again dissolved in ether, and exposed to a temperature of 18°, and this operation repeated as long as any thing separated. The adherent oil was removed from the solid mass by rinsing with a little cold ether. This substance, examined under a lens, appeared crystalline; but no crystalline form could be detected; it was inodorous and tasteless, adhered between the teeth like wax, was soluble in much ether, partially soluble in boiling alcohol of 0·780, but separated for the greater part on cooling. The solution was neutral. Oil of turpentine readily dissolved it; nitric acid has but little action upon it; caustic potash dissolves it readily, and nothing separates on the addition of chloride of sodium. Concentrated sulphuric acid mixes with it, colors it reddish, and diffuses an odor of butyric acid. On pouring water into this mixture, a reddish precipitate fell. This substance has most resemblance to wax, and differs from it principally by its solubility in oil of turpentine. It appears to form a peculiar *stearine*, like those which separate from the fatty oils, after long standing and in the cold. It is most easily separated from the fatty oil after removal of the tannic acid and the resin; cold likewise facilitates the separation. After standing for one year, the above amount of oil had furnished 19.1 grs. of stearine; no further separation was observed.

The quantity of the fatty oil which now remained amounted to 108 grs. It had a dark green color, but at first was bright green, probably owing to the presence of chlorophyl, which grew darker with time. It was of the consistence of oil of almonds, but did not congeal even at 9° F. The statement of Liebig, in Geiger's 'Handbuch der Pharmacie,' that the oil congealed like butter at 32°, is probably owing to the oil not having been pure, and still containing stearine and resin; its specific gravity at 59° is 0.942; it has a peculiar odor and a bitter taste. It is sparingly soluble in spirit of 0·820; alcohol of 0·780 dissolves some of it in the cold, and nearly the whole on the application of heat, but the greater portion of what has dissolved again separates on cooling. It has no acid reaction.

Treated with solution of caustic potash, it forms a greenish brown soap, which floats upon the solution. By treating the dissolved soap with muriatic acid, oleine and margaric acid could be separated according to Chevreul's method. From the mother-liquor combined with the wash-waters, after the addition of sulphuric acid and separation of the sulphate of potash, glycerine was obtained. With the acid nitrate of the protoxide of mercury, the oil solidified. With fuming nitric acid of 1·55 it likewise formed a solid mass; it consequently belongs to the non-siccative oils.

All the constituents of the root arranged together give in—

1000 parts of dry root,	21 parts of ash,
0·4 essential oil.	1·1 sulphate of lime.
60·0 fat oil.	0·4 phosphate of magnesia ($MgO + PO^5$)
10·0 stearine.	1·6 phosphate of lime ($CaO + PO^5$).
40·0 resin.	2·2 chloride of calcium.
100·0 starch.	0·4 chloride of sodium.
4·0 vegetable gelatine.	0·1 silica.
35·0 albumen.	9·4 carbonate of lime.
33·0 gum.	5·5 carbonate of potash.
110·0 sugar.	0·3 loss and traces of perphosphate of iron.
100·0 tannic and gallic acids.	
21·0 pectine.	21·0
15·0 amylaceous fibre.	
21·0 ash.	
450·6 fibre and loss.	
1000·0	

Chemical Gazette, Oct. 1, 1851.

ON THE BEST MODE OF PREPARING THE JUICE OF DANDELION, SO THAT IT SHALL CONTINUE IN PERFECT PRESERVATION THROUGHOUT THE YEAR.

The following mode of preparing the juice of dandelion, advised by Mr. Donovan (*Dublin Medical Press*, June 11th, 1851,) is worthy the attention of pharmaceutists :—

"The dandelion abounds in a milky juice; it has no smell; its taste when recent is very bitter, the roots more so than the leaves. By drying, the bitterness is destroyed, as happens to many other vegetable substances. I have observed that the juice of the recent

roots and herb loses its bitterness by long boiling, and that it even assumes a saline sweetish taste, such as is observable when it is extracted from plants dug during the cold months of the year. The change happens more easily in the juice of the leaves than in that of the roots; yet a decoction of the roots long boiled retains but little of its bitterness. The recent juice of the roots, if evaporated to dryness and restored to its original bulk by the addition of water, will be found by far less bitter than before. The solid extract is therefore a bad preparation, and as Lewis observes becomes worse still by being kept. Indeed the extract of commerce has but little bitterness, and is often so sweet as to suggest a suspicion that it contains a foreign admixture: I have sometimes thought that it was the sweetness of Spanish liquorice. Its color, which ought to be brown, is generally black.

"The bitterness is due to the presence of a proximate principle said to be crystallizable. When this has been impaired or removed by boiling, a sweetish, saline, and even acidulous taste is discoverable: it naturally belongs to the juice; for, besides the bitter principle, it is known to contain phosphates, sulphates, muriates, and tartaric acid, or a bitartrate, which are the useful ingredients: along with uncrystallizable sugar, gum, inulin, caoutchouc, and some other matters of no medicinal importance. The bitter principle and salts are the constituent ingredients which claim the attention of the practitioner; and it is to their preservation, by whatever process the juice is prepared, that the apothecary should devote his attention; for, as Dr. A. T. Thomson truly observes, 'much depends on the nature of the preparation.'

"Keeping the foregoing observations in view, the best mode of conservation is obvious. The whole herb as soon as dug is to be washed immediately, well pounded, and the juice extracted by means of the press. Delay in pounding the roots will soon begin to impair their bitterness; and even the expressed juice will speedily begin to change unless put in process of preservation very soon after expression. When the juice has been pressed out, the marc, still containing valuable matter, is to be well mixed with as much water at 200° as will bring the whole to about the consistence of a pulp. After standing two hours, the liquor is to be pressed out, added to the former product, and the mixture is to be very slowly evaporated in a wide earthen vessel, with constant agitation,

until it be reduced to one-half. We now have the salts, (which in a medical point of view are of great importance) and other ingredients in a much more concentrated form than in the original juice, but the bitter principle has been somewhat impaired in efficacy during the evaporation. Even if this deterioration had not taken place, the juice does not in its natural state contain a sufficient ratio of the bitter principle to act with adequate effect as a tonic when so moderate a bulk of the liquid is administered as is convenient or suitable. On this account a quantity of roots without leaves, equal to the weight of whole herb previously employed, must be pounded and expressed. This bitter juice, which is very small in quantity, not in some seasons more than a gallon from 112 pounds, is to be laid aside until the residual marc, from which it has been pressed, has undergone a new process, which is as follows: The mixture of juice obtained from the whole herb and the evaporated infusion of its marc is again to be brought to a boil, and at that temperature is to be infused on the marc of the roots; the temperature will thus be reduced below the injurious degree, but will be still sufficient for extraction of the bitter. When cold the liquor is to be strongly pressed out, and mixed with one-sixth of its total measure of spirit of wine. The mixture is to be poured into common quart bottles, but they are not to be entirely filled. Appert's process somewhat modified, must now be resorted to. A large shallow vessel containing cold water is to be placed on a fire: the nearly filled bottles are to be immersed in the water as high as the liquor within: the water is to be slowly brought to about 180°: the bottles are to be withdrawn, and the reserved juice obtained from the roots is to be added to each in equal quantities. These quantities ought to fill the bottles so high in the neck that when the corks are driven in there will be the smallest possible intervening space. The corks being cut off close to the glass, the mouths are to be sealed with hard bottle wax: and the bottles set by, inverted, in a cool place.

"The bitter principle, obtained in the second part of the process, having been scarcely exposed to heat, is as perfect as it existed in the roots. Heat is highly injurious to the active principle of various vegetable substances. The root of Arum maculatum is so poisonous and so acrid that it will blister the skin; but by boiling and even drying it becomes harmless, and in that state is by some

nations used as food. Mezereon bark in its recent state also blisters the skin, but by the moderate heat of drying it loses this power. The seeds of palma Christi are acrimonious and violently cathartic; yet when boiled they are used as an article of diet. The root of the cassava, which, like the dandelion, yields a milky juice, is in its natural state a violent poison, but when boiled it becomes harmless: the leaves, equally poisonous, are by heat rendered innocuous, and are eaten as a culinary vegetable: tapioca the food of the invalid, is obtained from the roots. The effect of heat on onions and garlic is known to every one.

"The quantity of spirit of wine here made use of, although it conduces to the preservation of the juice, is by itself insufficient; hence the necessity of Appert's process. Each ounce will contain about one drachm of spirit of wine; more might be disagreeable or inexpedient.

"By the foregoing process, we have dandelion juice in a degree of perfection not very inferior in qualities to that which exists in the plant in its natural state; and in a condition to retain its virtues throughout the year."—*Am. Jour. Med. Sci.*

PHARMACY IN SWEDEN.

By Dr. N. P. Hamberg,

Assistant Professor of Pharmacy to the Royal Caroline Institution, and to the Pharmaceutical Institution of Stockholm.

As the Pharmaceutical Journal already contains various articles upon the state of Pharmacy in different countries, and as the Editor has expressed a wish to have an article upon Pharmacy in Sweden, I have very great pleasure in communicating my knowledge upon the subject, hoping that if the notice is in some degree incomplete, it will be excused, inasmuch as it is written from memory.

In Sweden, as well as in many other countries, it has been the object of Government, by laws and other regulations, to provide that the people for a fixed moderate price, should obtain unadulterated medicines; and by means of limiting the number of shops, and preventing quacks or other incompetent persons from

interfering in the Pharmaceutical trade, have secured for the Apothecaries or Dispensing Chemists (*Apothekare*) a sufficient competence.

That the attention of the Swedish Government for a long time has been directed to Pharmacy is plain, from a royal resolution passed in the year 1663, which commands the publication of a Pharmacopœia (*Pharmakope*) and a price list of medicines (*Medicinal Taxa.*) The first Pharmacopœia was published some years afterwards (1686), under the name of "Pharmacopœia Galenochymica," and about the same time a price list of medicines.

The first edition of Pharmacopœia Svecica was published in 1775, and new editions according to the progress of science from that time to 1845, which is the sixth and last edition. The Swedish Pharmacopœia is written only in Latin.

COLLEGIUM MEDICUM.—The superintendence and inspection of the Pharmaceutical as well as of the Medical establishments in Sweden are committed to the charge of a Collegium Medicum (*Konglig Sundhets Collegium,*) whose members (*Medicinal Rad*) are nominated by the King; and every candidate for this office must be a Doctor of medicine, whose degree has been obtained by passing an examination.

APPRENTICESHIP.—Any youth who may wish to enter as apprentice in an Apothecary's shop, must be fifteen years of age, and ought to have gone through a school-course of History, Geography, Mathematics, Latin, and Modern Languages.

ASSISTANT, OR PHARMACIÆ STUDIOSUS.—The Apothecary must announce the name of the apprentice for registration in the Collegium Medicum, and provide for his instruction in Botany, Chemistry, and Pharmacy during the apprenticeship, which lasts from three to four years; and after which time the student is authorized to pass an examination in Botany, Chemistry, Pharmacy, Latin, and Modern Languages. This examination must be passed in Stockholm, in the Apothecaries' Society (*Apothekare Societeten*), and in the country before the official Physician of the province, together with the Apothecary who is the master of the apprentice. After this examination his oath is taken in compliance with the law and the official Pharmaceutical regulations, and he is now declared "*Pharmaciæ Studiosus,*" and capa-

ble of exercising the functions of an assistant in a shop, and also answerable for the prescriptions prepared by him; and by way of a check he must always sign his name to the label of the prescription.

(The apprentice or scholar is not answerable, and in consequence not allowed to prepare any prescriptions, he may sell innocent medicines only, as elder and chamomile flowers, juniperberry, gummi acaciæ, &c.)

PHARMACEUTICAL INSTITUTION.—After serving as an Assistant in a shop for three years, and producing a testimonial of the fact, he may now enter as Pupil at the Pharmaceutical Institution (*Pharmaceutiska Institutet*) in Stockholm, and there attend the lectures which are read in Botany, Materia Medica, and Pharmaceutical Chemistry, from the beginning of October to the end of May, with a few weeks vacations at Christmas. At the same time he must work two days a week in the operations of the laboratory.

The fees for the lectures and the course in the laboratory are together about £1. The pupil has free admission to the lectures in Zoology, Botany, Materia Medica, and Chemistry, at the Royal Caroline Institution (*Konglig Carolinska Institutet*,) and to the excursions of the Assistant Professor of Botany, which take place during the summer months, May, June, July, and August, in the environs of Stockholm.

After finishing the course in the laboratory, the duration of which depends upon the capacity of the pupil, he may request a private trial (*tentamen*) by the Professors in the prescribed branches of science, viz., Botany, Zoology, Materia Medica, Theoretical and Pharmaceutical Chemistry, and Toxicology.

If he can present in the Collegium Medicum a certificate from the Professors, of their satisfaction with the trial, a day will be appointed for examination, which is conducted by two Professors at the Royal Caroline Institution, and two of the Apothecaries in Stockholm before a member of the Collegium Medicum. During the examination, whoever wishes, is allowed to be present, and all the questions are registered in a book kept for that purpose, and a note made whether or not the answers are correct. And the examiners express the merits of the candidates by the

following different terms: *laudatur, cum laude approbatur, approbatur, cum approbatione admittitur*, and last of all, *admittitur.*

The examination is not passed unless the candidate receive the approbatur of all the examiners.

PROVISOR AND APOTHECARY.—After the examinee has taken an oath before the Collegium Medicum to comply with the laws and pharmaceutical regulations, he is declared "Provisor and Apothecary," and obtains a diploma to that effect. He is now at liberty to purchase by agreement an Apothecary's shop, if one becomes vacant, or through nomination, if a new one is required in any part of the country.

The right (*privilegium*) of dispensing medicines in a shop, properly procurable by personal permission from the Government, and which should cost only about £4 or 5 for the diploma, has become a traffic, and the price has gradually risen to such an extent, that at the present time the *privilegium*, or good-will of one of the best shops, is sold for about £3000—a sum beyond the reach of a poor though clever student.

Those who have been interested in the success of Pharmacy in Sweden, have proposed to mortgage (*amortisera*) the privileges by a loan; but their benevolent endeavors have been stranded by the difficulty of procuring so large a sum of money necessary for mortgaging the privileges over the whole of Sweden.

When a person through purchase or inheritance has become possessed of an Apothecary's shop, he must announce it in the Collegium Medicum in order to obtain from the Government confirmation of the privilege for himself.

If in any part of the country a new shop is required, the Collegium Medicum announce it, an propose three of the most deserving candidates. The Government nominates one of them. It is for the most part in country places, at a distance from any town, that new Apothecaries' shops are allowed for the convenience of the public. In the larger towns, on the contrary, they are rarely permitted.

The number of Apothecaries' shops in Stockholm is fourteen, to a population of 90,000. No new shop has been permitted during the last twenty years, as the number has been found more than sufficient. For in Sweden, as in many other countries, it

is observed that the larger number of inhabitants and the fewer shops the better are the medicines.

The Apothecaries have, in consequence, a sufficient competence ensured in their calling, and are not compelled to enter into other trades. Hence it is they love their profession, and by dispensing medicines of the best quality, strive to obtain the confidence of the authorities and the public. On the contrary, if the number of shops is very large—or, still worse, unlimited—the Apothecary or Chemist cannot gain a subsistence from his profession, and is, therefore, obliged to seek in other trades what he cannot find in his own; and Pharmacy instead of being the main object, is reduced to an insignificant rank, and reflects no credit upon its followers.

Under such a system, if each Apothecary train up one or more Assistants, the number of candidates for shops will in time become extravagantly large, and the difficulty of controlling them increases in the same proportion.

(Some of the Apothecaries in Sweden have endeavored, in consequence, to employ Assistants only, and no apprentices, in order to obviate too great competition.)

THE APOTHECARIES' SHOPS (APOTHEK.)—The shops in the towns are for the most part large, and internally are often arranged with considerable elegance. The laboratory, according to the regulations, must contain a steam apparatus for preparing decoctions, extracts, aromatic oils and waters, &c.

Decoctions and infusions must be prepared *extempore*.

Tinctures must be kept in a room in which the temperature is not under 15° Celsius, in order that the dissolved materials may not be precipitated by the cold.

Native vegetables must be renewed every year, and the old stock destroyed.

The best medicines, if there are several kinds in commerce, must always be written for.

Every shop has a sign of its own, derived from some animal or other object. To each medicine prepared according to a prescription must be attached a label, on which is the name of the shop.

The so-called homœopathic Apothecaries shops do not exist in Sweden. They are not necessary, inasmuch as homœopathy does

not seem likely to be long-lived there, and will soon become an historical curiosity. It is very probable—indeed, I believe it—that in Sweden as in other countries, many hysterical ladies, or *malades imaginaires*, male as well as female, have, perhaps, derived comfort from the potential homœopathic sugar-grains and interesting conversations with the homœopathic long-suffering Physician. But Swedes, in general, do not like this kind of medicine; no foreign, and only one Swedish Physician practices homœopathy in Stockholm, and, in the country, I believe, not a single one.

PRESCRIPTIONS (RECEPTER) AND THE PRICE-LIST OF MEDICINES (MEDICINAL TAXA.)—The Chemist must put on every prescription the price, which must be according to the rate of the price-list at that time. The Swedish price-list of medicines is revised every year and the price is changed according to the market-price of the drugs.

Medicines for external use ought to have a colored label, and powerful medicines are to be sealed.

The Chemist must prepare medicines according to the Swedish Pharmacopœia, unless the physician has (*expressis verbis*) prescribed otherwise. The Chemist is forbidden to prepare prescriptions of other than physicians who are allowed to practice in Sweden; and a list of them is every year published by the Collegium Medicum.

As a physician is not allowed to keep an Apothecary shop, because he has no Pharmaceutical diploma, so the Chemist is not allowed to practice in medicine: the privilege of that is granted only to such persons as have gone through a complete medical course at any of the Swedish Universities in Upsala or Lund, or at the Medico-Chirurgical Academy of the Royal Caroline Institution in Stockholm. To gain admission into the last-mentioned Academy, the student must have passed at some of the Universities a philosophical and philological examination.

Foreign physicians, unless they can present a diploma as Doctor of Medicine from a well-known University, are not allowed to practice medicine in Sweden without a so-called colloquium familiare in the Collegium Medicum, or medical course at the Royal Caroline Institution.

As the time of the Apothecary is not employed in medical

practice, and as his competence is sufficient, he can, if he loves science, employ his spare hours with tranquillity in working in that branch of science which he most affectionately embraces.

If, in general, a greater scientific activity of the Pharmaceutical profession in Sweden is to be desired, we must, however, with pleasure remember that private individuals, distinguished in other countries for original scientific researches, have been met with and are still to be found in Sweden. I will only here mention the most distinguished:—For about a century ago lived in Köping (a very small, and, for the greatest part of the world, unknown town in Sweden) an Apothecary and Chemist, who, with great eagerness, was laboring in Chemistry. The good Burghers in Köping very likely thought him a clever Apothecary, but none of them could foretell that their diligent friend the Chemist, *Carl Wilhelm* (*Charles William*) *Scheele*, in his small insignificant shop, was operating with experiments the result of which should astonish the whole scientific world.

Inspection of the Shops.—The Chemists' shops in Sweden must, according to the regulations, be inspected every year. These inspections are performed in Stockholm by two professors or assistant-professors to the Royal Caroline Institution, in presence of two Members of Collegium Medicum, and in the country of the official Physician of the province, together with a magistrate.

As the official Physician of the province has not time enough for Pharmacognosy, the Collegium Medicum has of late proposed to the Government a change in inspecting the shops in the country, so that, as in some parts of Germany, the whole country will be divided into a certain number of districts, and every district obtain a travelling inspector.

Should the inspector find any adulterated or bad medicine it must be immediately destroyed.

If an Apothecary is three times found to have sold adulterated medicines, he directly loses his privilege, and must give up his shop to another person.

It is at the same time a duty and a satisfaction for me to state, that medicines in Sweden are commonly very good, and when adulterated articles are met with are usually such as are imported.

Poisons, or other noxious medicines, which in the Swedish Pharmacopœia have this mark ☧, must not be sold without a sufficient prescription, which ought to be retained by the Chemist, and not repeated without a note from the Physician.

Poisoning is, consequently, very rare in Sweden, and when practiced it is commonly by means of white arsenic, which has probably been obtained from a glass manufactory.

Secret medicines are forbidden in Sweden, in spite of which charlatans try to sell secretly their all-relieving medicines, but they seem more and more to lose the confidence of the public, and their credit, too, sinks in the same proportion as the reputation of the scientific Physician increases.

Varieties.

On Schönbein's Ozone. By Professor Faraday.*—Professor Faraday commenced by stating, that considerable mystery was attached to the subject which he proposed to bring before the members on the present occasion, namely, *Ozone.* This name had been given by Schönbein, of Basle, to a substance or condition of matter which manifested itself under very peculiar and widely different circumstances. Schönbein regarded it as an independent body, and a constituent of the atmosphere; but in his (Professor Faraday's) opinion, it was nothing more than an allotropic condition of oxygen. It was never manifested except where oxygen was present, and where, at the same time, water, in a liquid or vaporous condition, was found. No substance had ever been separated from the atmosphere where ozone existed; but its presence was manifested, not merely by the strong smell peculiar to it, but by certain well marked chemical properties which the atmosphere containing it possessed.

When electricity is produced from a powerful machine, and allowed to be discharged by a point, there is a feeling of a current or aura as of vapor escaping, and at the same time a remarkable odor. If, during the passage of the electricity, a piece of paper moistened with a solution of iodide of potassium and starch, be brought near, the discharge causes the production of blue iodide of farina. The blue color thus produced is the result of

* Lecture in the Royal Institute, June 13th, 1851.

the oxidation of the potassium by the *ozone*, and the setting free of the iodine. This is one of the best tests for the presence of ozone. It was formerly supposed that nitric acid was produced by the discharge of the spark, and that the decomposition of the iodide was occasioned by this acid as a result of the union of oxygen with nitrogen in the air: but this theory will not account for the smell and other properties of this extraordinary agent.

Schönbein produces ozone in very large quantities by introducing into capacious bottles, with glass stoppers, pieces of cut and clean scraped phosphorus, with small quantity of water, so that the phosphorus may be partly in and partly out of the liquid. A vapor slowly rises in a current. After ten or twelve minutes the ozone is produced, and may be procured in admixture with oxygen and nitrogen by removing the phosphorus at a pneumatic trough, and thoroughly washing the interior of the bottle with water, in which ozone is insoluble. This body is thus separated from the vapor of phosphorus and phosphorous acid. (This experiment was performed in three bottles and several bottles of ozone previously prepared were now brought forward.) On introducing paper, wetted with starch and iodide of potassium, into one of the bottles, there was an immediate indication of the presence of this principle, by the production of a dark blue iodide of starch. Another remarkable property possessed by ozone was seen in its bleaching powers. Some ounces of a solution of sulphate of indigo were gradually poured into a bottle containing ozone, and shaken, when the color was as completely destroyed as if chlorine or chloride of lime had been present. A very small quantity of ozone would thus entirely discharge the color of a very large quantity of sulphate of indigo.

It has been already stated to be so little soluble in water, that a bottle containing it may be repeatedly rinsed with water without losing its ozonic contents. If, however, the stopper be removed, and it is exposed to air, it soon passes off. Ozone appears to be entirely destroyed by heat; or, at any rate, its production by electricity ceases when sparks are received from a red-hot metallic point. This fact was ingeniously illustrated by insulating a small galvanic battery, capable of raising at pleasure a platina ball to full redness; the battery was made part of the machine, and the platina ball the terminal point from which the discharges of electricity were received. The machine was set to work, and it was clearly and distinctly proved by Professor Faraday that the discharges from the red-hot platina ball produced neither the aura, the smell nor the decomposing effects on iodide of potassium and starch which were immediately manifested when the ball was allowed to cool, and the electric fluid was then passed through it.

The oxidizing properties of ozone are indicated upon metals which in practice it is rather difficult to convert to oxides, namely, silver. A piece of polished silver had been placed in a bottle of ozone for several hours,

and had acquired a distinctly brown tarnish, not from sulphur, but from a process of ozonation, or, in other words, oxidation. Polished lead similarly treated was also oxidized. Ozone had always a tendency to bring metals and metallic oxides to their highest degree of oxidation. In this respect it was the most powerful oxidizer that was known. A tube containing several rings of metallic arsenic had been placed for a short time in a bottle of ozone. The metal had entirely disappeared, and had become transformed into arsenic acid. Paper wetted with a solution of proto-sulphate of manganese was introduced into a bottle of freshly prepared ozone, and in the course of a short time black spots appeared over the surface, proving that the manganese had passed to a higher degree of oxidation.

Nitrogen and sulphur are easily oxidized by it. Schönbein succeeded in procuring a quantity of nitre (of which a crystallized specimen was shown) by the agency of ozone in contact with nitrogen (of air) and potash. Sulphur was also converted to sulphuric acid. Paper stained with sulphuret of lead was immediately bleached when exposed to an ozonic atmosphere. Some curious experiments of Schönbein's were now shown, in which portraits and inscriptions were seen in white letters on a dark ground, as a result of placing stenciled metallic plates on paper which had been stained brown by sulphuret of lead. The uncovered spaces had been exposed to light and air, or *insulated*. The result was that in these spots the sulphuret of lead had entirely disappeared, having been converted into colorless sulphate of lead by the oxidizing action of ozone.

The alleged bleaching properties of solar light on colored articles are thus probably due to the agency of ozone,—in other words, to a process of oxidation and alteration of color.*

Sulphuretted hydrogen, phosphuretted hydrogen, and all foul effluvia, are speedily oxidized and destroyed by ozone. It is, therefore, the great purifier of the air; and, owing to its continual exhaustion by oxidating processes, it is difficult to discover the presence of ozone in large and populous places, or in close and crowded dwellings. In the open air of the country, and on the sea, it constantly exists in a proportion which is probably subject to great variation, although ruled by laws which are at present unknown. Schönbein had contrived an *Ozonometer* for testing the amount contained in air. It is prepared by immersing paper in a solution made of one grain of iodide of potassium, ten grains of starch, and 200 grains of water. The paper is dried, and when intended for use, is exposed for some time to the air. There is no change until it is wetted with water, when, if ozone was present in air to which it had been exposed, a blue color will appear, the intensity of which varies according to the quantity of ozone present and the

* This hypothesis should have its correctness tested by the exposure of colors known to fade, in hermetically sealed tubes. Oils, it is well known, are bleached in close bottles; but they may contain air, and wherever there is air there is ozone, a very small portion of which possesses remarkable powers of bleaching.

length of exposure. The ozonometer consists of a series of papers thus colored in different degrees, and bears some analogy to the cynometer long since proposed by Humboldt.

Professor Faraday stated that, during the last autumn, when at Brighton, while walking close to the sea-shore, he exposed some strips of this prepared paper to the current of air coming over the sea, and, on subsequently wetting the paper, the presence of ozone was distinctly manifested by the blue color produced. On another occasion he received on the same paper the current of air blowing over the town, but no trace of ozone could be detected in it. When he went, however, on the windward side of Brighton, so as to catch the air blowing over the downs before it reached the town, ozone was strongly manifested by the result. It was thus established that in populous places there is a constant consumption of this principle.

It had been shown that ozone was evolved with the ordinary electricity of the machine; it was now proved that the current of the battery equally leads to its production. Water was decomposed by a Grove's battery, and the oxygen and hydrogen evolved were conducted through a tube in which cotton soaked in potash had been placed to arrest any traces of acid. The gases evolved at the end of the tube decomposed the iodide of potassium on starch-paper, and gave the usual indication of the presence of ozone.

Ozone is evolved in numerous chemical processes. If pure ether, mixed with water, be introduced into a wide-mouthed capacious bottle, and the vapor allowed to become diffused, it will be found that litmus paper introduced is not reddened, and that starch-paper prepared with iodide of potassium is not rendered blue. If, however, a glass rod be made hot in the flame of a spirit-lamp, and then introduced into the vapor of the bottle, litmus paper held above the rod becomes strongly reddened, and the iodide of potassium paper intensely blue. In the oxidation of ether vapor at a low temperature, ozone is evolved.

Ether, in its ordinary state, has no bleaching properties; but the ether thus treated had acquired the power of discharging the color from a large quantity of sulphate of indigo.

Essential oils are thickened by long exposure to light and air; they become ozonized and their properties changed. This was illustrated by reference to oil of turpentine. Freshly rectified and pure oil of turpentine was proved, by admixture with sulphate of indigo, to have no bleaching power. A small quantity of oil, which had been exposed to air and light (the air in a bottle half full,) destroyed the color in a few minutes like chlorine.

We cannot doubt that ozone exerts an important influence on the atmosphere, and, therefore, on the health of animals and vegetables. Schönbein, who is rather sanguine in his views, considers, from the irritant properties of ozone, that an undue proportion of it in air may give rise to epidemic influenza, bronchitis, and other affections of the air passages; and in making experiments at Basle, he found that, concurrently with the prevalence of

these disorders, ozone was very abundant in the air. On the other hand, it has been said that its deficiency in air will account for cholera or fevers, since the foul effluvia or miasmata giving rise to these diseases are not completely destroyed or removed by the oxidizing action of ozone. These of course, are mere speculations insusceptible of proof; but in the meantime, it, must be conceded that the subject opens a new road to experiment and observation, and that very important results may be obtained by following out Schönbein's researches.—*London Medical Gazette, June 20th*, 1851.

On the Siphonia, or India-Rubber Tree. By Richard Spruce, Esq.—The Seringue-tree has long been known to exist abundantly on the Rio Madeira, but it is only during the present year that it has been found to grow on the Ramos in considerable quantity.

After breakfast the Capitaô accompanied us into the forest, and showed us the Seringue-trees, and the mode of collecting the milk. A track had been cut to each tree, as also to adjacent flats of Urucurí palm (*Cocos coronata*, Mart.) which, curiously enough, is almost invariably found along with the Seringue, and whose fruit is considered essential to the proper preparation of India-rubber. A stout sipó is wound round the trunk of the Seringue, beginning at the base and extending upwards about as high as a man can reach, and making in this space two or three turns. This sipó supports a narrow channel made of clay, down which the milk flows as it issues from the wounded trunk, and is received into a small cuya deposited at the base. Early in the morning a man goes into the forest and visits in succession every tree, taking with him a terçado and a large cuya (called *cuyamboca*) suspended by a handle so as to form a sort of pail. With his terçado he makes sundry slight gashes in the bark of each tree, and returning to the same in about the space of an hour he finds a quantity of milk in the cuya at the base, which he transfers to his cuyamboca. The milk being collected and placed in a large shallow earthern-ware pan, several large caraipé-pots, with narrow mouths, are nearly filled with the fruit of the Urucurí and placed on brisk fires. The smoke arising from the heated Urucurí is very dense, and as each successive coat is applied to the mould (which is done by pouring the milk over it, and not by dipping it into the milk,) the operator holds it in the smoke, which hardens the milk in a few moments. The moulds now used are all of wood, and not of clay as formerly, and the one generally preferred is in the form of the battledores which English housewives use for folding linen, only thinner, and flat on both sides, and the milk is applied only as far as to the insertion of the handle, the latter being held by the operator. When the requisite number of coatings has been applied, and time has been allowed for the whole to stiffen, the seringue is withdrawn from the mould by slitting it along one side and end. In this state it is known in the Pará market as *Seringue em couro*, or hides of India-rubber, and it is preferred to the bottle-rubber by purchasers. I send you

one such "hide" from which you will see that Capitaô Pedro's manufacture is not despicable. If the bottle-moulds are used, or if a shoe is to be moulded on a last, a stick of two feet long is always inserted into the mould to guarantee the operator's hand from the milk and smoke. Some shoes we saw here had thirty coatings apiece of seringue. The Capitaô was getting about six milreis an arroba (32 lbs.) for his seringue, but in Pará it sells for as much as ten milreis. November is the season of ripe fruit of the seringue, but the trees on the Ramos had been completely stripped by the aráras, a sort of long-tailed parrot.—*London Pharm. Journ., from Hooker's Journal of Botany.*

On the Solution of Carbonate of Lime by Syrup of Lime.—M. Barreswill, in the course of some investigations on sugar, has ascertained that the compound of sugar and lime, sometimes called syrup of lime, has the property of dissolving carbonate of lime, as carbonate, and probably forms with it a double salt. This fact is interesting, and has considerable interest in connection with the extraction of sugars. It also accounts for the fact that syrup of lime is not rapidly rendered cloudy by exposure to the air by the precipitation of carbonate.—*Journ. de Pharm.*

Reagent for discovering Sugar in Animal Fluids.—A simple and easy means of discovering the presence of sugar in the blood, urine and bile, has been indicated by an English physician, Dr. Donaldson, viz.:

Take of	Carbonate of soda, crystallized,	5	grammes.
	Caustic potassa,	5	"
	Bitartrate of potassa,	6	"
	Sulphate of copper, crystallized,	4	"
	Distilled water,	32	"

Boil and filter.

A few drops of this solution, thrown into urine or other liquid suspected of being saccharine, and heated over a spirit lamp, will discover the smallest quantity of sugar present. After a few minutes application of heat, the liquid acquires first a yellowish green color, and becomes more and more reddish yellow as the proportion of sugar is more considerable.—*Journ. de Chim. Med.*, Nov., 1851.

Persulphate of Iron a test for Gum.—M. Lassaigne states that *arabin* (pure gum arabic) dissolvedi n water, produces, with persulphate of iron added in small quantity, a *gelatinous yellowish* precipitate, *transparent as animal jelly.* Syrup of gum diluted with water gives the same reaction, whilst simple syrup is not affected. *Dextrine* is not precipitated by persulphate of iron, nor is starch and some other principles which are thrown down by subacetate of lead. Hence the ferruginous sesqui-sulphate taken in connection with subacetate of lead and alcohol, is a very good means of determining the presence of arabin, or soluble gum.—*Journ. de Pharm.*

Culture of Cinchona Bark in Algeria.—It has been stated that the Jesuit fathers of the house of Cusco in Peru intend sending to an agricultural colony under the direction of the Jesuits in Algeria, a number of plants of the Peruvian bark tree. The possibility of naturalizing this valuable tree on the sides of Mount Atlas, and at a height about that at which it grows on the Andes, at 1200 to 3200 metres (4000 to 10,000 feet) above the level of the sea, is yet very problematical, because it appears to have a particular predilection for the region of the Andes, the direction of which it follows without dispersing itself in other parts of tropical America.—*Journ. de Pharm.*

Cement for Stone Ware. By M. HELLER.—Gelatine is allowed to swell in cold water, the jelly warmed, and so much recently-slacked lime added as is requisite to render the mass sufficiently thick for the purpose. A thin coating of this cement is spread while warm over the gently-heated surfaces of fracture of the articles, and let dry under a strong pressure. What oozes out is removed directly with a moist rag.—*Chem. Gaz., from Central-Blatt.*

On Gambogic Acid and the Gambogiates, and their use in Artistic Painting. By Dr. SCOFFERN.—The author described the composition of gamboge as a gum-resin, and stated that some years since he had proposed the use of a preparation of it for oil-painting. For this purpose he had employed methods to get rid of the gum. To obtain the gambogic acid, he recommended ether to be employed when the coloring matter is dissolved, and by distillation the ether is given off; the last portions however are retained with so much force that a temperature of 230° or 240° obtained, and this would destroy the color unless water was employed with the ether. About one-twentieth of water was previously added to the etherial solution of the pigment, or gambogic acid. The gambogiates of lime and other bases were under examination; the gambogiate of iron however produced a rich brown, like asphaltum, but capable of more richness and certainty in oil. From the trials made, the yellow and brown seemed to be permanent colors, having useful properties as oil-colors. He also thought they might be usefully employed in fresco.—*Ibid., from Athenæum.*

On a new Alkaloid from Opium. By F. HINTERBERGER.—The author purchased as narcotine a substance which contained very little of that principle, but consisted for the greater part of a new alkaloid, whose composition is represented by the formula $C^{66}\ H^{36}\ NO^{23}$. The author has named it *opianine.*—*Ibid., from Liebig's Annalen.*

On the Quantitative Estimation of Manganese. By RICHARD LAMING, ESQ.—I find, contrary to what is stated in works on chemical analysis, that carbonate of manganese is not decomposable at ordinary temperatures by the oxygen of the atmosphere, but remains perfectly white if it have been

precipitated without an excess of carbonate of potash or carbonate of soda. When the excess of either of these reagents is used in its precipitation, the excess of the alkali decomposes a portion of the metallic carbonate, and becomes a sesqui or a bicarbonate. If a bicarbonate of the alkali be used to precipitate carbonate of manganese, the precipitant may be added in excess, and the precipitate exposed to the air with impunity. Manganese resembles the magnesian class of metals in its carbonate being undecomposable by caustic ammonia; hence either of the carbonates of the volatile alkali may be used with effect to precipitate a carbonate of manganese that will remain persistent in the atmosphere. Carbonate of manganese, when exposed to any high temperature approaching near to redness, passes at once into the black oxide, without apparently going through any intermediate state of oxidation.—*Pharm. Jour., from Phil. Mag.*

On the Detection of Sulphur. By Mr. J. W. Bailey.—Dr. Playfair's beautiful salt, the nitroprusside of soda, is justly recommended by its discoverer as the most delicate of all tests for alkaline sulphides [sulphurets]. An application of it, which is very obvious, although not alluded to by Dr. Playfair, is to employ it not only as a direct test for alkaline sulphurets, but as an indirect one for sulphur in any of its compound. Any substance containing sulphur will yield an alkaline sulphuret if heated with carbonate of soda, either with or without the addition of carbonaceous matter, acording as a deoxidizing action is or is not required. The magnificent purple which is then produced by the addition of the fused mass to a drop of the solution of the nitroprusside will at once prove the presence of sulphur. This reaction is so easily obtained, and is so decisive, that the nitroprusside of soda must take its place among the most useful adjuncts of the blowpipe tests. By means of it, the presence of sulphur in the smallest particles of coagulated albumen, horn, nails, feathers, mustard seed, &c., which can be conveniently supported on a platinum wire for blowpipe experiment, may be most distinctly shown; and I have repeatedly obtained the characteristic purple tint in operating upon a piece of a single fibre of the human hair *less than an inch in length.*—*Silliman's Journal*, May, 1851.

Combinations of Sugar and Lime. By M. Peligot. [In a paper published in the *Journal de Pharmacie*, and republished in the Pharmaceutical Journal for July, 1851, the following table of the amount of lime taken into solution by syrup of various densities is found. M. Peligot infers from his experiments that the statement of Soubeiran, that the compound formed has a constant composition of $2\,C_{12}\,H_{11}\,O_{11}$, 3 CaO, is incorrect, and that the compound always formed at first, is $C_{12}\,H_{11}\,O_{11}$, CaO, which afterwards dissolves more or less of the base according to the density of the saccharine solution.—Ed.]

The following table shows, 1. The composition and the density of the

saccharine liquor; 2. Its density after having been saturated with lime; 3, The quantities of lime and of sugar contained in 100 parts of residue yielded by evaporation to dryness of each of these solutions. This residue was dried at 248° F. The densities were taken with the utmost accuracy by means of a specific gravity bottle:—

Sugar in 100 Parts Water.	Density of Saccharine Solution	Density of Liquid when saturated with Lime.	100 Parts of the Dry Residue contain	
			Of Lime.	Of Sugar.
40.	1.122	1.179	21.	79.
37.5	1.116	1.175	20.8	79.2
35.0	1.110	1.166	20.5	79.5
32.5	1.103	1.159	20.3	79.7
30.0	1.096	1.148	20.1	79.9
27.5	1.089	1.139	19.9	80.1
25.0	1.082	1.128	19.8	80.2
22.5	1.075	1.116	19.3	80.7
20.0	1.068	1.104	18.8	81.2
17.5	1.060	1.092	18.7	81.3
15.0	1 052	1.080	18.5	81.5
12.5	1.044	1,067	18.3	81.7
10.0	1.036	1.053	18.1	81.9
7.5	1.027	1.040	16.9	83.1
5.0	1.018	1.026	15.3	84.7
2.5	1.009	1.014	13.8	86.2

Formation of Sulphuric Ether by Chloride of Zinc.—Fused chloride of zinc is soluble in hot highly rectified spirit of wine, and if the solution of it be distilled, it gradually acquires the smell of sulphuric ether, and a specific weight of 0.796. The more concentrated this alcholic solution becomes, and the more the temperature increases by continued distillation, the more distinctly the formation of sulphuric ether takes place; and the cause of its generation is, that at a certain temperature the affinity of the chlorine in the chloride of zinc for the hydrogen, and of the zinc for the oxygen, of the spirit of wine, increases to such a degree, that decomposition takes place. We find, therefore, in the distillate, besides spirit of wine and ether, also a small quantity of muriatic acid, and in the residue free oxide of zinc. As chloride of zinc consists of one equivalent of chlorine and one equivalent of zinc, the alcohol must have lost hydrogen and oxygen in the same proportion as the latter form water; the ether must, therefore, necessarily be alcohol minus HO. This does, however, not prove that alcohol is a hydrate of ether, *i. e.*, that the water is contained in it ready formed as such; on the contrary, it can be shown that alcohol is a simple organic substance. Chloride of zinc, distilled with water, lets the water pass over without decomposition, neither muriatic acid nor oxide of zinc being generated. It is, therefore, clear, that, if oxygen and hydrogen are once com-

bined to form water, the affinity of the single constituents of chloride of zinc are unable to destroy this combination ; and that, if the combinations are actually destroyed, as is the case in the present experiment, the oxygen and hydrogen cannot be united as water.

This experiment refutes the theory, according to which alcohol is said to be the hydrate of ether, and serves to corroborate the fact, that ether can in no way be changed again into alcohol by communicating water to it. If, therefore, alcohol does not contain ready-formed water, it cannot be changed into ether by mere water-abstracting power, but only by water-generating power. And with this all experiments agree. Chloride of calcium merely abstracts water, but does not generate ether, for its constituents have so strong an affinity for one another, that they cannot be separated by the simultaneous attraction of the oxygen and hydrogen contained in the alcohol. Chloride of tin, chloride of antimony, and chloride of iron act in a similar manner to the chloride of zinc, destroying alcohol and generating ether ; as also fluoride of boron and fluoride of silicon, which substances do even decompose the water and generate hydrofluosilic acid and boracic or silicic acid. These facts speak strongly in favor of Dr. Mohr's theory of the generation of ether.—*Buchner's Repert. and Pharm. Journ.*

On the Datura Sanguinea. By M. Berthold Seemann, Naturalist of H. M. S. Herald.—The *Florispondio* (*Datura sanguinea*, Ruiz et Pav.) appears to have always played, and still continues to play, a prominent part in the superstition of tropical America. The Indians of Darien, as well as those of Choco, prepare from its seeds a decoction, which is given to their children to produce a state of excitement in which they are supposed to possess the power of discovering gold. In any place where the unhappy patients happen to fall down, digging is commenced ; and, as the soil nearly everywhere abounds with gold-dust, an amount of more or less value is obtained. In order to counteract the bad effect of the poison, some sour *Chica de Maiz*, a beer made of Indian corn, is administered.—*Hooker's Journ. Botany, and Ibid.*

On the Palo de Velas or Candle-Tree. (*Parmentiera cereifera*, Seem.) By M. Berthold Seemann.—This tree is confined to the valley of the Chagres, where it forms entire forests. In entering them, a person might almost fancy himself transported into a chandler's shop. From all the stems and lower branches hang long cylindrical fruits, of a yellow wax-color, so much resembling a candle as to have given rise to the popular appellation. The fruit is generally from two to three, but not unfrequently four feet long, and an inch in diameter. The tree itself is about twenty-four feet high, with opposite, trifoliolated leaves and large white blossoms, which appear throughout the year, but are in greatest abundance during the rainy season. The *Palo de velas* belongs to the natural order *Crescentiaceæ*, and is a *Par-*

mentiera, of which genus, hitherto, only one species, the *P. edulis*, De Cand. was known to exist. The fruit of the latter, called *Quauhxilote*, is eaten by the Mexicans; while that of the former serves for food to numerous herds of cattle. Bullocks, especially, if fed with the fruit of this tree, Guinea grass, and *Batatilla (Ipomœa brachypoda*, Benth.) soon get fat. It is generally admitted, however, that the meat partakes in some degree of the peculiar apple-like smell of the fruit; but this is by no means disagreeable, and easily prevented if, for a few days previous to the killing of the animal, the food is changed. The tree produces its principal harvest during the dry season, when all the herbaceous vegetation is burned up; and on that account its cultivation in tropical countries is especially to be recommended; a few acres of it would effectually prevent that want of fodder, which is always most severely felt after the periodical rains have ceased.—*Hooker's Journ. of Botany, and Ibid.*

On the Growth of Plants in Various Gases, Especially substituting Carbonic Oxide, Hydrogen, and light Carburetted Hydrogen for the Nitrogen of the Air. By Messrs. Gladstones.—Dr. Gladstone gave the results of experiments made and still in progress, with his brother, Mr. G. Gladstone. After describing the effects on some flowers, as the pansy, the crocus, &c.—a discussion ensued—Mr. R. Warington suggesting that in such experiments the plants be allowed to take root well before immersing them in the gases; next, that the combined atmospheres were too much saturated with moisture, often causing rapid growth and decay; and that these flowers and roots should be compared with others grown in similar volumes of confined common air.—Prof. Dumas spoke of the great, and, indeed, almost unsuspected influence of carbonic oxide gas. The judicial investigations in France had disclosed the fatal effects of this gas as being so much greater than carbonic acid gas. In the atmosphere produced by the burning of charcoal, 1-200th part of carbonic oxide was fatal, while with one-third the volume of carbonic acid the animal was asphyxiated, but afterwards revived. The Chairman said that he had reason to believe that in the combustion of anthracite, much carbonic oxide gas is produced.—*Ibid, from Report of British Association in the Athenæum.*

Editorial Department.

PHARMACEUTICAL CONVENTION HELD IN NEW YORK, OCT. 15TH, 1851.—In our last number it was stated that a Convention of delegates from the Colleges of Pharmacy had been called by the New York College, to meet in New York, for the purpose of considering the propriety and practicability of fixing a set of standard strengths and qualities of drugs and chemicals for the government of the United States Drug Inspectors. For an account of what was accomplished by the Convention, our readers are referred to an article at page 22, which was taken partly from a notice in the Boston Medical and Surgical Journal, partly from the Minute Book of the Secretary, and partly from our recollection of the occasion.

PHARMACEUTICAL CONVENTION TO MEET IN PHILADELPHIA OCT. 6TH, 1852. The following is a circular letter addressed by President Guthrie, to the pharmaceutists of the United States, on behalf of the late Pharmaceutical Convention.

NATIONAL PHARMACEUTICAL CONVENTION.

CIRCULAR LETTER.

New York, November 25th, 1851.

SIR,—At a Meeting of Delegates from the Colleges of Pharmacy of the United States, held in this city, on the 15th of October, 1851, the following Preamble and Resolutions, explanatory of themselves, were offered, and, after a free and full discussion, unanimously adopted:

"*Whereas*, The advancement of the true interest of the great body of PHARMACEUTICAL PRACTITIONERS, in all sections of our country, is a subject worthy of earnest consideration; and *Whereas*, Pharmaceutists, in their intercourse among themselves, with Physicians, and the public, should be governed by a Code of Ethics calculated to elevate the Standard, and improve the Practice of their Art; and *Whereas*, the means of a regular Pharmaceutical Education should be offered to the rising Pharmaceutists by the establishment of SCHOOLS OF PHARMACY, in suitable locations; and *Whereas*, it is greatly to be desired that the united action of the Profession should be directed to the accomplishment of these objects; THEREFORE

Resolved, That, in the opinion of this Convention, much good will result from a more extended intercourse between the Pharmaceutists of the several sections of the Union, by which their customs and practice may be assimilated; that Pharmaceutists would promote their individual interests and advance their Professional standing by forming Associations for mutual protection, and for the education of their Assistants, when such Associations have become sufficiently matured; and that, in view of these important ends, it is further

Resolved, That a Convention be called, consisting of three Delegates each from incorporated and unincorporated Pharmaceutical Societies, to meet at Philadelphia, on the First Wednesday in October, 1852, when all the important questions, bearing on the Profession, may be considered, and measures adopted for the organization of a National Association, to meet every year."

The objects set forth in the above, I trust, will meet the hearty approbation of yourself and the Apothecaries of your place, and lead to the formation (if not already in existence) of such an Association as will coöperate in the furtherance of the proposed Association.

Our Medical brethren have, as you doubtless are aware, an organization, similar in character, holding its sessions annually, in which all matters pertaining to their Profession are fully discussed,—the beneficial effects of which are already apparent, though the Association has been in existence but a few years.

They cannot give to the subject of Pharmacy the attention it requires and deserves, neither is it a matter legitimately falling under their cognizance, but belongs to Pharmaceutists themselves.

The Medical Profession and the Community at large rightfully look to us for the correction of any existing abuses, the advancement of the Science, and the elevation of the business of an Apothecary, to the dignity and standing of a Profession.

To this end we invite you to the formation of such Associations, in view of the Convention, to be held in Philadelphia, on the first Wednesday of October, 1852.

Communications, intended for said Convention, may be addressed to William Procter, jr, Philadelphia, George D. Coggeshall, New York, or S. M. Colcord, Boston.

Any communication, touching the subject of the above letter will be cheerfully responded to by the President of the Convention.

C. B. Guthrie,
President Convention Colleges of Pharmacy.

When the invitation to the Convention from which the above resolutions emanate, was received by the Philadelphia College of Pharmacy, several of the members expressed the opinion, that although the call was for a special object, the Convention might take a wider range in its influence, and form a *point d'appui* from which the pharmaceutical profession of the whole country might be reached, and a course of action instituted, which eventually would revolutionize the condition of Pharmacy in the United States. The most sanguine hopes of these members were gratified by the unanimous adoption of the above preamble and resolutions, by the Convention.

We feel a lively faith that ultimate and lasting good will result from this movement: We cannot repress the expression of a deep gratification at the prospects which open out in the future favorable to the real progress and elevation of our Profession, both in its practical and scientific relations, over our favored country, wherever the apothecary has located, or is locating. It will necessarily be a work of time, and calls for the faith, the energy, and the untiring perseverance of its supporters. But is not the object

worthy of its advocates and their best exertions? That object is no less than a complete organization of the large, but to a great extent ill educated body of Pharmaceutists of the United States, which will induce the existing members to pursue an efficient course of *self education*, and dispose them to extend to their protégés and assistants a more liberal tuition in the sciences accessory to our Art.

Perhaps in no country in the world is the proportion of apothecaries to population greater than in our own. In no country is their practice so little interfered with by legislative enactments or so little fostered by the government. Left to themselves to pursue what course they may choose it is only when some of them by ignorance or carelessness have harmed the community, that common law steps in and deals with them as with other offenders against the well being of society; whilst no legal inducement is held forth for their improvement or encouragement.

In view of these facts what a noble field is open for pharmaceutical reform! A strong interest has already been awakened far and wide; from many a distant city and secluded town has the voice of inquiry gone forth seeking for the means of self improvement; and whether this interest arises from pecuniary or higher motives, it indicates that the blossoming time is approaching; that the fruit yet in embryo will soon be forming, and that on wise treatment and careful culture will depend the abundance, and the quality of the harvest.

We would then, with all the earnestness of our nature, invite the serious attention of our brethren, every where, to the Resolutions of the Convention; we ask them to throw aside local jealousies, and sectional feelings, and as the basis of a national Pharmaceutical reform, to found local societies for mutual improvement. Let every town and every city have its society. It is *in* these and *by* these that real good is to be promoted, for charity begins at home. *They* are in fact the only sure foundation upon which to base a state or national association; for however eloquent and persuasive the language of Conventions, when addressed to individuals, and however wise and useful the precepts they inculcate,—like the seeds, sown by the husbandman, they will perish or yield but a scanty and impoverished return, if the soil of local influence and interest be not prepared for their reception at the outset, and carefully tended by the hand of culture during progress in germination, growth, and fruition.

Fewness of numbers should not deter pharmaceutists from associating. A dozen well disposed men can accomplish wonders when enlisted in a common cause, and animated by a single interest. The Pharmaceutical Society of Great Britain, now numbering more than twenty-five hundred members in all parts of England, and in Scotland, had its birth at a tea-party given in London by a prominent chemist and druggist. A small number may not be adequate to establish a School, or desire to seek an act of

incorporation, but if not sufficiently numerous or advanced to teach others, they are sufficiently so to learn themselves. And how, it may be asked can it be done? We answer, by adopting a constitution and by-laws; by establishing monthly or more frequent meetings for inquiry and discussion on subjects appertaining to their business, or concerning their future advancement; by adopting a code of ethics regulating the intercourse and conduct of the members in their professional relations; and finally by subscribing to scientific Journals and standard works for circulation among themselves, so as to form the nucleus of a library. Every association of this kind is entitled to send three representatives to the Convention of 1852; for the far-seeing language of the Resolutions is "from incorporated and *unincorporated* pharmaceutical societies."

As a member of the Committee for receiving, collecting and communicating information and suggestions bearing on the Convention, we will cheerfully communicate with parties desiring information, or who may wish to have their views thrown before the Convention when it meets.

In regard to the utility of the proposed Convention itself, we have no fears, provided it is based on a wide spread representation—provided it is composed of earnest and sensible men, who aim at *the possible*, and fear not to grapple with that which keeps them from its possession. Before the continued voice of such a gathering, quackery, whether *professional* or *vulgar* would quail—would shrink into the hands of men quackish by nature, and the profession, washed of its contamination, could with clean hands and clear accents raise their voices against it with an effect, on all but the hopelessly ignorant, that would cripple the most fruitful sources of its present success.

New Lebanon; its Physic Gardens, and their Products.—In the last number, in speaking of the establishment of the Messrs. Tilden, we promised a further communication on the same subject, but in its relations to the United Society or people called "Shakers," residing in the same valley. During our short visit we received a hearty welcome from Mr. Edward Fowler and his friends, that caused us to regret our inability to accept their kindly offered hospitality, and to examine more closely than the time permitted, their gardens and their arrangements for drying and packing herbs and for making extracts.

The chief tract of land occupied by the "Society" lies on the right hand side of the valley, in approaching the village of New Lebanon, the residences, factories and public buildings of the Society occupying a plateau elevated perhaps two hundred feet above the high road. As their policy is directly cumulative, their lands occupy a large portion of the most valuable soil of the neighborhood, and many excellent lots and fields in the village and other parts of the valley, amounting, if we rightly remember, to near seven thousand acres. This large extent is by no means devoted to medicinal

plants, the culture of these forming but one branch of the operations of this industrious people, whilst agriculture and several manufactures are equally carried on. "It is about fifty years," says Mr. Fowler, "since our Society first originated as a trade in this country the business of cultivating and preparing medicinal plants for the supply and convenience of apothecaries and druggists, and for about twenty years conducted it on a limited scale. Some thirty years since Drs. E. Harlow and G. K. Laurence, of our Society, the latter an excellent botanist, gave their attention to the business, and induced a more systematic arrangement, and scientific manner of conducting it, especially as to the seasons for collection, varieties, and method of preparation. Since their time, the business has rapidly increased, and especially so within the last ten years. We believe the quantity of botanical remedies used in this country, particularly of indigenous plants, has doubled in less than that time."

"There are now probably occupied as physic gardens in the different branches of our Society, nearly two hundred acres,* of which, about fifty are at our village. As we find a variety of soils are necessary to the perfect production of the different plants, we have taken advantage of our farms and distributed our gardens accordingly. Hyoscyamus, belladonna, taraxacum, aconite, poppies, lettuce, sage, summer savory, marjorum, dock, burdock, valerian, and horehound, occupy a large portion of the ground; and about fifty minor varieties are cultivated in addition, as rue, borage, carduus, hyssop, marsh-mallow, feverfew, pennyroyal, &c. Of indigenous plants we collect about two hundred varieties, and purchase from the South, and West, and from Europe, some thirty or forty others, many of which are not recognised in the Pharmacopœia, or the dispensatories, but which are called for in domestic practice and abundantly used."

The drying and storing of so many plants requires much space, and several buildings are occupied wholly or in part for this purpose; the principal and central one of which is a neat structure about 120 feet long by 38 feet wide, two stories high with a well lighted basement and airy garret. The basement is devoted to the pressing, grinding and other heavy work, whilst at one end the steam boiler is placed. The first story is used for packing, papering, sorting, printing, and storing the products, whilst the second story and loft are used exclusively for drying and storing. Being well lighted and airy, these rooms are well fitted for the purpose. Racks of hurdles are conveniently arranged along the centre on which the herbs previously garbled are placed to dry, which is rapidly accomplished by the free circulation of air that is maintained throughout. The sides of the second story room are arranged with large and tight bins, in which the plants are put as soon as they are properly desiccated, until removed for pressing.

Some plants which are very succulent, or viscid, and which are difficult to properly cure, as conium, hyoscyamus, and garden celendine, are desiccated

* This number probably includes the settlements of Shakers, in New Hampshire, Ohio, and Western New York.

in a drying room, constructed for the purpose where a temperature of about 115° Fahr. is maintained. Most of the roots are dried in this way, after being sliced.

The Society have three double presses in constant operation, and occasionally use two others. Each of these is capable of pressing 100 lbs. daily, although of some kinds of material which require but little time "to set," three times this quantity can be packed.

We were shown into the evaporating room where the vacuum apparatus is stationed. This consists of a globular copper vessel supported on cast iron columns attached to the floor, about the size of an ordinary sugar vacuum pan. The bottom is jacketted for applying steam heat, whilst there is an interior false top extending from the sides up nearly to the manhole at top, which prevents the vapor which may condense on the interior of the proper top from falling back into the bowl of the evaporator. They at present, have no steam engine, but use a peculiar arrangement for exhausting the air from the pan, which consists in attaching the condensing vessel to a vertical tube 30 or 40 feet high, in which a column of water is constantly and rapidly descending, the effect of which is to produce a constant suction, of sufficient force to keep the evaporater sufficiently exhausted. As the apparatus was not in operation during our visit, we had no opportunity of observing the condition of the barometer guage. The water used for this purpose is derived from a small dam fed by mountain springs in the higher portion of their demesne.

In our last communication we stated, what we believed to be true, that the "Society" had adopted the vacuum pan in their extract manufacture to compete with their neighbors Messrs. Tilden, who, we believe, preceded them in its employment, not intending to infer that they would not have adopted it, had the idea been suggested in any other way, as appears to have been understood by Mr. Fowler and his friends, who feel themselves called upon to "deny the insinuation that *no other* motive was sufficient to induce the improvement; as not a member of our community had the least knowledge that medical extracts had ever been manufactured in America by that process at the time our apparatus was built. We knew that the imported extracts were generally esteemed as superior to many if not all the American, and feeling desirous of having our articles *right*, we adopted the vacuum pan as a necessary item by the recommendation of several members of the New York College of Pharmacy, whom we consulted on the occasion."

Mr. Fowler informs us that the amount of extracts manufactured at their establishment annually was about six or eight thousand pounds, but since their improvements in apparatus and manipulations, this amount has been greatly increased, and the quality improved. Extract of taraxacum is in the greatest demand, their product in this article amounting the past year to 3700 pounds. Conium, hyoscyamus, and belladonna class next. They do not cultivate conium, but collect that of spontaneous growth, believing it to be more active. Belladonna and hyoscyamus, especially the latter, re-

quires a rich deep soil and abundance of strong animal manure. They find henbane a very precarious crop, as when young it is almost impossible to keep it from being destroyed by insects, and some years they have entirely lost it, notwithstanding their best endeavors to protect it. The biennial variety of henbane is alone cultivated, and when not destroyed by insects, etc., has under the most favorable circumstances yielded at the rate of 1300 pounds of good extract from an acre of plants.

Some inquiries relative to the consumption of such large quantities of extracts, induce us to believe that by far the larger portion of them are used in the preparation of secret medicines. An agency in this city sold as much as 1200 pounds of extract of dandelion to one quack medicine vender, doubtless the proprietor of some extraordinary anti-dyspeptic elixir, or liver pills.

New York Journal of Pharmacy.—We are informed by a prominent member of the New York College of Pharmacy, that a Pharmaceutical Journal is about to be published under the auspices of that Institution with the above caption. It is to be issued monthly, each number to contain 32 pages, and to be Edited by Dr. Benjamin W. McCready, the Professor of Materia Medica and Pharmacy in the New York College of Pharmacy.

As an indication of the progress of Pharmacy, and especially as intimating a revival of scientific interest among our brethren in New York, we would welcome the "New York Journal of Pharmacy" as a younger sister, instituted for the same object—destined, we hope, for a successful career. We will cheerfully join hands with her in the dissemination of pharmaceutic knowledge; in the advocation of a correct system of pharmaceutical ethics; and in the pursuit of measures calculated to elevate our profession, and rid its ranks of the numerous pretenders which the absence of legal restraint, and the want of a just discrimination in the public patronage, have admitted and encouraged.

In the midst of the most numerous community in the country, possessed of means of intercommunication with all the world exceeding every other American city, the New York Journal will commence its course under favorable auspices, and if she only succeeds in arousing the apathy of the New York Pharmaceutists, and in enlisting their talents in the cause of science, she will merit the respectful consideration of the whole profession.

Outlines of Chemistry for the use of Students. By William Gregory, M. D., Professor of Chemistry in the University of Edinburgh. *First American from the second London Edition,* by J. Milton Sanders, M. D., L.L. D., Professor of Chemistry, &c., Cincinnati. H. W. Derby & Co., publishers.

The work of Dr. Gregory, contrary to what has been usual with modern works on chemistry from the British press, has not been republished here until several years after its issue in London. Although well known to many

American chemical students in its English garb, a large number of persons whose business or taste incline them to chemical pursuits, have not met with the work. It has been looked upon as one of the most comprehensive treatises of the modern school of organic chemistry accessible to the English student, and appearing as it now does with the notes of an American Editor, it should be increased in value.

The most striking peculiarity of Dr. Gregory's book, is the omission of any connected account of the imponderables, *heat*, *light*, *electricity* and *magnetism*. The author considering these subjects as appertaining more properly to a course on physics, which should be included in the preliminary studies of the student, has omitted them chiefly because the time devoted to an ordinary course of lectures in medical institutions is too brief to enable the lecturer to illustrate them properly.

Whilst admitting the force of this reasoning as applied to students properly *pre*-educated, we think it very different when considered in relation to a large number of the candidates for the diploma in this country, whose preliminary education in science has been far too meagre to properly fit them for practitioners. To such, the important bearing which electricity and heat especially, have in chemistry and medical science, renders their elucidation in connection with the course on chemistry, a matter of no small importance.

The first forty pages are devoted to an explanation of the laws of affinity combination, definite proportion, isomorphism, isomerism, etc. The metalloids are then treated of, followed by the metals and their binary compounds, the theory of the constitution of salts, and a condensed description of the salts themselves.

The organic part, which is treated in much more detail than the inorganic division, is evidently that portion of the work in which the author feels the strongest interest himself, and which he believes should most forcibly attract the medical student, from its connection with physiology, toxicology, etc. A pretty full account is given of the doctrines of radicals, types, and substiutions, of oxidation, and fermentative metamorphoses, in the first thirty pages. The radicals and their derivatives, commencing with amidogen, occupy a large portion of the remainder of the book, and present these subjects, elaborate as they are, in as clear a view, as their abstruseness will perhaps admit. The organic acids and alkalies, coloring substances, and neutral principles, are followed by the pyrogenous products of organic bodies, and a general notice of animal chemistry, which concludes the work.

As a text book for the purely *chemical* student, Dr. Gregory's treatise ranks deservedly high. We do not know how far the British medical universities and colleges are enabled to imbue their pupils with the fundamental doctrinesof organic chemistry, as set forth in the work before us, and acquaint them with details; but it appears to us that this important branch of chemical science needs some master hand to simplify its arrangements, with a view to the wants of the medical student, by which he can escape

from the labyrinth of theories, and keep within the range of the more important facts. It cannot be expected that he shall become a *chemist* by listening to the lectures, and witnessing the few experiments of two medical courses; and the home study which he should give to the subject, should be assisted by a text book of the most simplified and lucid character. The book of Professor Gregory, therefore, whilst it bears on its face the most undoubted evidence of the ability and talent of its author, is in our opinion not as well fitted for a text book for medical students, as are less elaborate works.

The duty of an editor in revising a book should be to bring it up to the level of the progress of discovery at the time of issue—and as four years have elapsed since the last foreign edition was published, we naturally look for additions, which are not to be found in the foot notes of the editor, nor in the text, and several of which are important.

In looking over the notes, at page 75, the mode of accounting for the greater solubility of *caustic* lime in cold than in hot water, by attributing it to carbonic acid present in the former liquid, is certainly novel!

Again, we perceive at pages 426 and 430, notices of certain compounds of citric and tartaric acid with sesquioxide of iron, and the bases quinia, morphia and *salicin* (!) so as to form double salts. Professor Sanders says, salicin is a weak base, but will, under favorable circumstances, form salts with acids, and acid radicals. At page 363 in the text, salicin is called a neutral body, and is analogous to sugar. We presume that sugar, starch or gum, have equal claims to basic power, and a *ferrotartrate of arabin* might be made. In fact the amorphous character of the salts of citric and tartaric acids with sesquioxide of iron alone or shared with other bases, gives ample opportunity to associate any soluble compatible body with those acids, which may then be saturated with sesquioxide of iron, and evaporated on glass to obtain the mixture in scales. The ferrotartrates and citrates of iron with quinia and morphia are recommended to be made by adding the pure alkalies to a saturated solution of citric and tartaric acids, and neutralizing the solution with hydrated sesquioxide of iron. As no chemical formulæ are given for these compounds, we naturally ask how much morphia? how much quinia? In a work of acknowledged accuracy, it is to be regretted that such loose statements should gain admission. The note at page 474 on *Resinoids*, both as regards the discovery and the nature of these principles, is inaccurate, and we think, notwithstanding the opinion of its writer, that a long time will elapse ere "active principles analogous to the alkaloids in nux vomica, opium, &c.," will be found in these so called *resinoids*. In almost every instance yet investigated, natural vegetable alkalies exist in combination with an excess of acids, so as to be soluble in water. Narcotin is partially an exception. The best known of the substances in question, podophyllin, was first isolated in a state of purity by Mr. John R. Lewis (see Am. Jour. Pharm., xix, page 165,) and shown to be a resin like that of jalap.

We have not had time to examine closely the typographical correctness of the very numerous and complex formulæ, in the organic department of the work—but as far as we have done it they appear correct. Apart from the points noticed, the book is very creditable to the editor and publisher, to both of whom we would express our thanks for so valuable an accession to our chemical literature.

The Elements of Materia Medica and Therapeutics. By JONATHAN PEREIRA, M. D., F. R. S., and L. S. *Third American Edition, enlarged and improved by the author. Including notices of most of the medicinal substances in use in the civilized world, and forming an encyclopædia of Materia Medica.* Vol. I. Edited by JOSEPH CARSON, M. D., Professor of Materia Medica and Pharmacy in the University of Pennsylvania, &c. Philadelphia, Blanchard & Lea, 1852.

The first volume of the third edition of Dr. Pereira's Elements of Materia Medica, was published in London in 1849. Since that period the second volume has been slowly evolving from the press, and will not be completed until towards the middle of the year 1852. In view of this delay, Messrs. Blanchard & Lea determined to publish the first volume separately, which has been accomplished in the book before us. The publishers, in order to render the work in the highest degree worthy of the confidence of the American reader, secured the services of Dr. Pereira to revise, enlarge, and prepare it for the American press; an arrangement specially useful, as, since the English edition was issued, two of the British pharmacopœias have been revised, rendering many changes in the details of the work necessary. This, like the former American editions, has been brought out under the supervision of Professor Carson, who, besides introducing the formula of the new United States Pharmacopœia, has added "notices of articles and information on topics which more especially interest American Physicians." The second volume which is now in press, we are informed, will be ready about July or August 1852.

In looking over the volume in hand, we were first struck with its improved typography, and more numerous illustrations, and afterwards by the great increase of matter, which amounts to 124 pages more than the first edition. The additions and improvements are very numerous and thorough, and extend into every subject on which, in the progress of observation, new light has been thrown. To attempt a review, embracing even a tythe of the additions, would occupy more space than we could offer, nor shall we attempt it; but to give an idea of the close scrutiny to which the materia medica has been subjected by our indefatigable author, we will give a short quotation, with illustrations:

"*Common Calcined Magnesia.* (*Magnesia Calcinata.*)—This is a much lighter preparation than the so called, heavy calcined magnesia. All the samples which I have met with are contaminated with the carbonate, and

effervesce when mixed with water and acetic acid. When moistened and examined by the microscope in day light, it appears of a pale yellow color and is found to consist of a flocculent or minutely granular substance intermixed with fragments of prysmatic crystals (similar to those found in the light carbonate of magnesia.) See figure 1.

Figure 1.

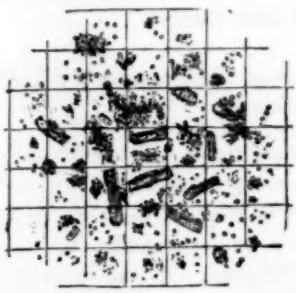
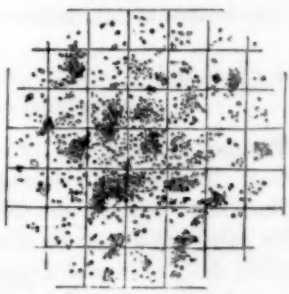


Figure 2.



"*Heavy Calcined Magnesia.* (*Magnesia Calcinata ponderosa.*) This is sometimes called *condensed calcined magnesia.* It is a harder, firmer, purer, and heavier preparation than the preceding. None of the commercial samples which I have examined contain so much carbonate as the common calcined magnesia, and do not therefore effervesce so freely when mixed with water and acetic acid. Some of the samples which I have met with, are, to the naked eye, quite pulverulent: others are composed of little lumps or masses formed by the cohesion of the powder, and which have sufficient hardness to produce a ringing sound when shaken in a glass bottle. On the label of one specimen of this kind which I have met with, it is stated that one part in bulk is equal to three parts of the common calcined magnesia. When moistened and examined by daylight with the microscope, Howard's heavy calcined magnesia is seen to consist entirely of yellow minute granules, more or less cohering into small masses: no fragments of crystals were perceptible in it. (See Fig. 2.) The same I found to be the appearance of other commercial samples of heavy calcined magnesia, as well as of *Henry's Calcined Magnesia.*"

The application of the microscope, in discovering the characters, and in ascertaining the genuineness of drugs, etc., has been extensively brought to his assistance by our author.

The numerous and valuable improvements in the first volume or inorganic part, in which, usually, changes are less apt to be needed, lead us to anticipate a great accession of interesting subjects in the second volume on organic drugs. We have reason for believing, from the numerous contributions of Dr. Pereira to the Pharmaceutical Journal, that he has subjected the work to a most thorough examination, and the interesting contributions from the East, South America, and the Indies, which were attracted to London by the World's Exhibition, will doubtless be made use of when their interest or value demands it. Besides, it will be in the second volume more especially that the additions from the pen of Dr. Carson will appear. When completed, therefore, this work of Dr. Pereira will be beyond all

question the most comprehensive treatise in the English language on Materia Medica and Therapeutics, and especially valuable to investigators by its numerous references to authorities. For these reasons we would advise every physician who is desirous of posting himself up on the important subjects treated, to own it, and every pharmaceutist who aims at a thorough acquaintance with materia medica, should possess the work, if it is only for the benefit of his assistants in pursuing their studies.

The Physician's Visiting List, Diary, and book of Engagements for 1852. Philadelphia, Lindsay & Blakiston.

The usefulness of this little book to the practitioner will hardly be questioned. To those physicians whose habits are systematic, it will be familiar, and perhaps present arrangements analogous to those they are daily using; and to those others, and they are numerous, who lack system in their daily routine of duties, this book, *if followed*, will lead to the formation and fixing of useful habits, not the least important of which is the economy of time. The almanac, and the short hints in reference to doses, antidotes, professional ethics, etc., embraced in the preliminary pages, may often assist memory at a moment of need.

A Compilation of Latin Labels, *from the revised edition of the United States Pharmacopœia and other standard authorities; published by authority and under direction of the Philadelphia College of Pharmacy. Sixth Edition.* Philadelphia, 1852.

We are gratified in being able to state that the sixth edition of the book of Latin Labels for shop furniture has been published, after some unavoidable delay. A very decided improvement has been effected by the Committee having it in charge, by putting each kind of label together, and by placing them in uniform columns and in alphabetical order. The curved labels have been much increased by occupying the space of the specimen labels attached to the last edition, which have been omitted in this, the Committee having determined hereafter to print the specimen labels of all kinds in a separate book.

Druggists wishing to be supplied with these labels from the College, should apply to Charles Ellis, No. 56 Chestnut street, Philadelphia, who is Chairman of the Label Committee.

Class of the Philadelphia School of Pharmacy, September, 1851-2.—We annex a list of the students in attendance at the Philadelphia School of Pharmacy the present session, and are pleased to notice that it is larger than that of the last session.

A CATALOGUE OF THE STUDENTS

CONSTITUTING THE CLASS OF THE

PHILADELPHIA COLLEGE OF PHARMACY,

For the Session of 1851-2.

Agnew, Henry	Philadelphia,	Pennsylvania.
Alexander, Maurice W.	"	"
Bachman, Alexander	"	"
Baker, Charles	"	"
Baker, T. Roberts,	Richmond,	Virginia.
Balliet, Louis	Lehigh Co.	Pennsylvania
Barclay, James S.		Kentucky.
Beck, Abraham R.	Litiz,	Pennsylvania.
Bispham, J. L.	Philadelphia,	"
Bonsall, Charles T.	Trenton,	New Jersey.
Bower, Henry	Morrisville,	Pennsylvania.
Buck, Charles E.	Philadelphia,	"
Burton, David F.	Dover,	Delaware.
Caldwell, Jr, Samuel W.	Philadelphia,	Pennsylvania.
Cañedo, Cipriano	"	"
Conyers, James R.	"	"
Corbett, John	"	"
Davis, John L.	"	"
Detwiller, John J.	Northampton,	"
Dieffenbacher, Calvin O.		"
Downs, Michael J.	Philadelphia,	"
Doret, Augustus M.	New York,	New York.
Douty, Henry P.	Philadelphia,	Pennsylvania.
Edwards, Wm. H.	"	"
Eggert, Charles H.	Bethlehem,	"
Emanuel, Louis M.	Delaware Co.	"
Evans, Lemuel L.	Montgomeryville,	"
Farr, James M.	Philadelphia,	"
Franks, Edward G.	Lewistown,	"
Gahan, Edward J.	Dublin,	Ireland.
Gaillard, E.	Philadelphia,	Pennsylvania.
Gormly, George M.		Virginia,
Griffith, William H.	Philadelphia,	Pennsylvania.
Gutekunst, Frederick	Germantown,	"
Hance, Edward	Philadelphia,	"
Harper, David	Shippensburg,	"
Harres, J. Henry	Philadelphia,	"
Hartman, Wm. B.	Malaga,	New Jersey.
Hendel, Samuel D.	Philadelphia,	Pennsylvanis.
Herndon, James	Winchester,	Kentucky,
Heyser, William	Chambersburg,	Pennsylvania.
Holden, John	Frankford,	"
Hooper, John H.	Cambridge,	Maryland,
Humburg, William G.	Philadelphia,	Pennsylvania.
Humphreys, Jesse B.	Montgomery,	"
Jenks, J. Ridgeway,	Bucks Co.	"

Jones, Alfred	Philadelphia,	Pennsylvania.
Jones, Tobias W.	"	"
Jones, William		Ireland.
Kerlin, Frederick E.	Chester,	Pennsylvania.
Leuchsening, Herman	Havana,	Cuba.
Mansfield, Michael	Philadelphia.	Pennsylvania.
Mitchell, Alexander	"	"
Moore, Robert	Baltimore,	Maryland.
Morgan, David U.	Philadelphia,	Pennsylvania.
Morris, J. H. M.,	Louisville,	Kentucky.
Ogden, Edward H.	Philadelphia,	Pennsylvania.
Patterson, William M.	"	"
Peltz, Richard	"	"
Perot, Joseph S.	"	"
Rittenhouse, Henry N.	"	"
Ritter, Bradford	"	"
Rogers, Charles S.	Norfolk,	Virginia.
Ruch, John H.	Pottsville,	Pennsylvania.
Savery, Jr., William	Philadelphia,	"
Selfridge, Matthew M.	Allentown,	"
Sharswood, J.	Philadelphia,	"
Sheaff, John F.	Delaware Co.,	"
Shinn, James T.	Philadelphia,	"
Shrom, Charles F.	Carlisle,	"
Smith, Mahlon K.	Salfordville,	"
Southall, Turner H.	Norfolk,	Virginia.
Stackhouse, David L.	Bucks Co.,	Pennsylvania.
Stevens, Hennell	Philadelphia,	"
Stoeckel, George W.	"	"
Thomas, Jesse J.	Beverly,	Rhode Island.
Thompson, Wm. B.	Philadelphia,	Pennsylvania.
Thompson, Wm. H.	"	"
Tomlinson, E.	"	"
Uhler, Jonathan K.	"	"
Verner, Chittick		Ireland.
Walker, Wm. H.	Waynesboro,	Pennsylvania.
Walters, Joseph P.	Philadelphia,	"
Watson, William S.	"	"
Willitts, Charles J.	Burlington,	New Jersey.
Wolff, Wm. H.	Philadelphia,	Pennsylvania.
Ziegler, Henry S.	Salfordville,	"